DOCUMENT RESUME

ED 224 995 CE 034 871

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TITLE Potential Vocational Education Indicators: Vital Statistics for Planning, Review and Public Information about Vocational Education.
INSTITUTION Minnesota Univ., Minneapolis. Research and Development Center for Vocational Education.
PUB DATE Jun 82
NOTE 107p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Educational Planning; Educational Research; *Information Needs; Outcomes of Education; Postsecondary Education; Program Improvement; Secondary Education; *Social Indicators; Statistical Surveys
IDENTIFIERS *Minnesota

ABSTRACT

An initial set of potential indicators for use in planning, reviewing, and providing puplic information about vocational education in Minnesota was identified. A list of approximately 70 characteristics of vocational education was submitted for review by secondary, postsecondary, and adult vocational education program administrators and the staff of the Division of Vocational-Technical Education in the State Department of Education. Subjects responded on a scale from 1 (not necessary) to 7 (essential) in terms of importance regarding four categories of characteristics: program enrollees (inputs), program leavers (outputs), program structure (process), and program need (context). The characteristics judged most important and recommended for an initial set of vocational education indicators were employer satisfaction with the quality of graduates' work, number of graduates employed in occupations related to the program, projected job openings in occupations related to the program, number of graduates employed, occupations for which the program is designed to provide training, performance of enrollees in the program, and program cost. Recommendations included further justification for the potential indicators by clients and those providing resources to operate vocational education. They also include the need for pilot testing of the potential indicators. (Appendixes include the questionnaire and some data.) (YLB)

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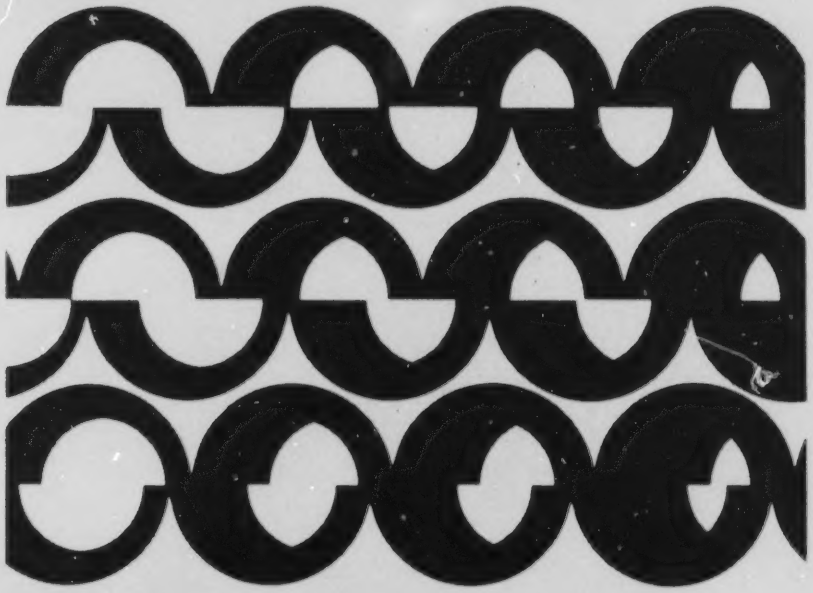
# Potential Vocational Education Indicators:

## Vital Statistics for Planning, Review and Public Information About Vocational Education

By George H. Copa, M. Nagi Salem



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June, 1982

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# PREFACE

This report is the first in what is hoped to be a new research thrust toward increasing the use of information already available in Minnesota about vocational education. The idea being implemented is to develop a series of social indicators which describe the "health" of vocational education in the state. What might be the "vital statistics" about vocational education -- those numbers to be raised above the many other statistics already available? What relatively few pieces of information would adequately serve to best provide direction for program improvement and rationalize its cost? This study suggests a potential set of such information -- potential vocational education indicators.

The authors wish to acknowledge the cooperation of the many survey respondents -- the high response rate was gratifying and contributed much to the validity of our findings. Special thanks go to the vocational education administrators who agreed to participate in a series of mini-conferences to assist in the critique and interpretation of our results. We hope we have been accurate and complete in sharing their comments and suggestions.

George H. Copa

# ABSTRACT

The purpose of this study was to identify a first set of potential indicators of use in planning, reviewing and providing public information about vocational education in Minnesota. A list of approximately 70 characteristics of vocational education was submitted for review by secondary, post secondary and adult vocational education program administrators and the staff of the Division of Vocational-Technical Education in the State Department of Education. There was substantial agreement on the most important characteristics for planning, review and public information. The characteristics judged most important and therefore recommended by the authors as the best candidates for an initial set of vocational education indicators were:

- Employer satisfaction with quality of graduate's work.
- Number of graduates employed in occupations related to program.
- Projected job openings in occupations related to program.
- Number of graduates employed.
- Occupations for which program is designed to provide training.
- Performance of enrollee in program.
- Program cost.

Further justification of the adequacy of these potential indicators as well as the consideration of additional indicators should be obtained from the clients of vocational education, both students and employers, and from those providing resources to operate vocational education. At the same time, these potential indicators should be moved to a pilot testing phase to determine the feasibility of their calculation, display and interpretation and their actual use in planning, review and providing public information about vocational education. During this process the indicators should be used cautiously and with restraint until their adequacy is convincingly demonstrated.

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# CHAPTER I.

# INTRODUCTION TO STUDY

It seems that each field of human endeavor has its important indicators of "what's going on." In the area of health, some common indicators are body temperature, blood pressure, pulse rate and death rates. Agriculture uses yield per acre, price per acre, price per head and return per $100 of feed fed. More common economic indicators are the gross national product (GNP), unemployment rate, inflation rate and consumer price index. What are the comparable indicators for vocational education? That is the purpose toward which this study was addressed, particularly focusing on Minnesota.

Indicators of this kind are typically used to monitor the general state of a given phenomenon -- vocational education in this case. The indicators then form the basis for decisions about changes which are necessary and when these changes are implemented, to review their effects. In these uses, the indicators are often provided to the public by decision makers as a justification for actions taken on behalf of the public.

For the indicators to function effectively, the following characteristics seem desirable (DeNeufville, 1975; Henriot, 1972; Land & Spilerman, 1975):

1. Reflective of the major ends and/or means of the phenomenon.
2. Serve as good proxies for several other factors which are important but more difficult to measure or would provide information "overload."
3. Easily understood.
4. Generally accepted as being valid and reliable measures.
5. Feasibly calculated in terms of time, cost and expertise available.

Indicators must be reflective of major ends (goals) and means (processes) if they are to provide an "at a glance" indication of "what is going on." Because a limited amount of information can be handled at any one time, the indicators must be relatively few in number. In order to be consistently interpreted by a wide variety of groups and individuals, they must be easy

to understand. If decision makers (and the more general public) are to "put faith in them," the indicators must be generally accepted as "good" measures of what is thought to be measured and the way of deriving the indicators must be standardized. Last, the characteristic of feasible calculation is necessary if the statistics are to be delivered "on-time" and "with available staff and budget."

## Purpose

As already noted, the purpose of this study was to begin the selection of a set of indicators for vocational education in Minnesota. This particular study is one in a series of studies conducted by the Minnesota Research and Development Center for Vocational Education (MRDC) in its program of research related to "planning vocational education." Prior studies have resulted in: (1) developing a conceptual framework for thinking about planning vocational education (Copa, 1981) (2) a preliminary list of important factors, priorities and information needs in planning vocational education (Copa, Geigle, and Imade, 1976). (3) a list of knowledge and skills needed by state vocational education planners and training materials to address those needs of high priority (Copa and Geigle, 1976), (4) a description of alternative conceptions of the ends and means of vocational education (Lerwick, 1979), and (5) expert advise on the process of planning as it relates to vocational education (Copa and Moss, 1982). Considerable work as a part of this same program of research by the MRDC has focused on collecting and interpreting some of the types of information thought to be useful for planning vocational education (e.g., student follow-up, employment projections, social demand, teacher supply and demand).

The more specific purpose of this study was to select a "most likely" set of indicators for vocational education in Minnesota for use at state and local levels of education. The indicators were to cover secondary, post secondary and adult vocational education programs. Indicators were to be useful in planning, reviewing, and providing public information about these programs.

## Assumptions

The concept of planning is based on the assumption that there are relatively few really important variables in a decision making situation, which if considered, allow one to project fairly accurately what will happen in the future. A major aspect of planning research is to identify if the decision situation meets this assumption and if so, to identify the relatively few key variables in what may otherwise be viewed as a very complex system. A second assumption made in this study is that the variables considered important for planning are the same variables useful in reviewing progress and final evaluation of the system under consideration. Further, these same variables should be used by both those delegated the responsibility for planning and review and those ultimately paying the cost and receiving the products of the system (i.e., general public, clients).

# CHAPTER II.

# RELATED LITERATURE

This chapter will be used to describe the evolution of the notion of social indicators, only one kind of which might be called vocational education indicators. The review of ideas, past research and experience with social indicators is used to provide a context and guidelines for selection of vocational education indicators and developing reasonable expectations for their implementation and use. The review is organized into sections referring to the historic development, definition, uses, selection and development of social indicators. The contents of later chapters will draw on this discussion to help understand the strengths and limitations of the study's design and interpretation of findings.

## Historical Development of Social Indicators

In the United States, the notion of identifying and publishing information about social indicators on a national basis is usually traced back to 1929 when Herbert Hoover set up a President's Committee on Social Trends. The Committee subsequently issues a report entitled, Recent Social Trends in the United States under the direction of William F. Ogburn (Johnson, 1978). After a long period of apparent inactivity, the Department of Health Education and Welfare in 1959 began a series of publications entitled HEW Indicators and HEW Trends; the series continued until 1966.

In 1965 the Russell Sage Foundation initiated further study of the idea of social indicators which culminated in 1968 with the publication of Indicators of Social Change: Concepts and Measurements edited by Eleanor Bernett Sheldon and Wilbert E. Moore. At about the same time (1962) the American Academy of Arts and Science commissioned a project to investigate the second order effects of the space program on the American society. This effort resulted in a much broader based report entitled, Social Indicators, which was edited by Raymond Bauer and published in 1966. In 1969, the U. S. Department of Health, Education and Welfare, during the

Johnson Administration, published Toward A Social Report. The basic idea of this report was the development of a comprehensive set of social indicators similar to the "Economic Indicators" which had been developed to monitor the U.S. economy. The authors of the above report used the word "toward" in the title to reflect that the report represented only the beginning stages in what would have been a much more comprehensive report if time, resources, and data had permitted. Also during the Johnson Administration, Senator Walter Mondale had introduced legislation in the Senate entitled the "Full Opportunity and Social Accounting Act" which would have provided for a Council of Social Advisers, An Annual Social Report and a Joint Congressional Committee on the Social Report. The bill passed in the Senate but was not supported in the House or by the then Nixon Administration.

In 1972, the U.S. Department of Commerce issued Social Indicators 1973; this was followed by Social Indicators 1976 and 1980. These reports attempt a very comprehensive report of information about social conditions in the United States (both point-in-time and, in some cases, trends). The index to the 1980 report shows that indicators are presented concerning the following areas: population and the family; health and nutrition; housing and environment; transportation; public safety; education and training; work; social security and welfare; income and poverty; social participation; and culture, leisure and use of time. This report contains only data often displayed in elaborate graphs with little explanation of why or how these conditions came about--the assessment is left up to the reader.

More particular to the conditions of education, the U.S. Office of Education and later the Department of Education have annually published The Condition of Education since 1979. This year, the Department will issue a separate report on vocational education entitled The Condition of Vocational Education.

At the same time these latter developments were going on toward refining a set of national social indicators in the United States, a new professional journal came into being starting in 1974 entitled, Social Indicators Research, to specifically publish the growing research materials related to this area. A further stimulus to the social indicator movement in the United States was work by the United Nations (1952) and the

Organization for Economic Cooperation and Development (1978) to very systematically develop a set of social indicators to examine and set goals for social conditions among various countries. The literature on social indicators is now substantial; as early as 1972, one bibliography on social indicators contained over 1000 articles and books (Wilcox, Brooks, Beal & Klonglan); a more recent and selective bibliography is provided by the U.S. Department of Health, Education and Welfare (1978). Several applications of indicators have been made at the state level (e.g., Collazo, Lewis & Thomas (1973), Jaeger (1977)).

This brief review of the history of social indicator development suggests that the concept has become established and somewhat institutionalized at the national level. Further, the concept is being very systematically contemplated at the international level. There is a growing body of knowledge about and some experience at selecting, developing and using social indicators to monitor the status of social well-being.

## Defining Social Indicators

In examining some of the major reports and books about social indicators, a diversity of definitions of a social indicator are in evidence. Some of the definitions used are as follows:

> Measurement of the contents of the social life of members of society (Land & Spilerman, 1975, p. 1).
>
> Statistics which reflect directly on matters of public concern (DeNeufville, 1975, p. 7).
>
> Quantitative data that serve as measures of socially important conditions of society (Henriot, 1972, p.3).
>
> Statistics which measure social conditions and change therein over time for various segments of the population (Land, 1976, p.13).
>
> A direct and valid statistical measure which monitors levels and changes over time in a fundamental concern (Organization for Economic Cooperation and Development, 1976).

> A statistic of direct normative interest which facilitates concise, comprehensive and balance judgment about the conditions of major aspects of a society (U.S. Department of Health, Education, and Welfare, 1970, p. 97).
>
> Selected statistics or measures ... that describe the status of the population ... to reflect significant aspects of social concern or topics of interest (U.S. Department of Commerce, 1980, p. xx).

What is evident from these definitions is that social indicators are quantitative in nature and measure constructs which are important to our social lives. They tend to imply the image of a set of "dials" which indicate the state of health in a society very much as a fever chart might be used by a doctor to monitor the condition of a patient.

Some authors make it very explicit that social indicators are to be distinguished from mere statistics in that indicators are normative (i.e., there is a direction of movement which is considered an improvement) and tend to be measures of outcome or ends rather than inputs or means (Land, 1975). For example, using these distinguishing features in the social area of crime, the amount of resources spent per person on police protection would be a social statistic (not straight forwardly interpreted as being normative and an input) while the number of fealonys per person would be a social indicator (easily normative and a measure of outcome). Other authors, (Olkinuora, 1973; Femis, 1978), however, advise that these distinctions are not always clear nor useful since statistics about inputs or means may be the best proxy indicators for outcomes which cannot be easily measured or when the concern is not only about the status of an outcome but also about why this status exists and how it might be changed. In a production function sense, this perspective holds that indicators might include both the output and input factors (Land and Spilerman, 1975). More will be said concerning the definition of social indicators in a later section of this chapter concerning indicator selection.

## Uses of Social Indicators

Bauer (1966) suggests that the purpose of social indicators is "to

assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact" (p. 1). This definition seems to encompass the three purposes of social indicators which were cited by Land (1975) as making up the "social policy" rationale for indicators; this rationale is among the most common cited by various authors in their discussions of the uses of social indicators. The social policy rationale, which reflects perhaps the most sophisticated and powerful use with highest expectations for benefits, includes the following purposes: (1) evaluating particular social programs, (2) establishing a system of social accounts (analogous to economic accounts) and (3) establishing social goals and setting social policy (Land, 1975, p. 5). The thought is that social indicators can be used to help press the issue of identifying social objectives and, once these objectives are identified, to work out policy which will lead to their achievement. Further, this rationale suggests that a comprehensive set of social indicators can be identified and measured to produce a "social account" or "balance sheet" as is possible with economic indicators (e.g., gross national product, consumer price index). At a glance, it would then be possible to examine what conditions exist and how things may have changed over the recent past. Last, this rationale encompasses the idea that social indicators can be used to evaluate the success or failure of specific social programs which might be implemented to reach particular goals. That is, social indicators could be used to develop a "report card" on programs which could be used to better inform those providing resources about the effectiveness of these programs. Land (1976) suggests that the external validity of social indicators must be based on the indicators being thought of mathematically as arguments in a social welfare function of the form, $w = f(O_1, O_2, O_3, \ldots O_n)$, where "w" equals general welfare and "$O_1$, - $O_n$" are social indicators.

The social policy rationale has come under some sharp criticism as to its realisticness (Duncan, 1970; Sheldon & Freeman, 1970). The critique has pointed out that the setting of goals and priorities should come from consideration of national values and objectives rather than from manipulating a set of statistical data. Johnson (1978) in his conclusions to America In the Seventies: Some Social Indicators, cautions that social

indicators "are conceptual constructs that guide our perceptions of reality. In revealing certain aspects, they obscure or remove attention from other aspects" (p. 294). There is a danger that a few officially sanctioned indicators may be very captivating (and simplistically so) and thereby make us insensitive to other measures which may be more difficult to measure or represent new problem areas to which we should be attentive. Concerning the use of social indicators to construct a set of social accounts, the critics suggest that this use is premature, even technically. They suggest that the normative social theory needed to define the relevant variables and their interrelationships as a basis for selecting indicators is rudimentary. The same basis is used to counter the expectation that social indicators could be used to evaluate specific social programs. The social world is much too complicated to expect broad social indicators to be responsive to individual programs. The cause and effect relations are much too tenuous and many other factors (besides the program of interest) may be acting to cause what is happening. It is suggested that the purpose of evaluation be left to evaluation research.

In summary, Henriot (1972) concludes that the social policy rationale with its three purposes represent <u>impossible</u> uses of social indicators. The reasons lay in technical deficiencies and even more so in underdeveloped conceptual sophistication concerning social phenomena. He suggests that the possible uses of social indicators, which recognize what is technically possible and is attentive to conceptual limitations are: (1) improving social reporting, (2) analyzing social change, and (3) predicting future social events and social life. Land (1975) has subdivided these possible uses into a <u>social change rationale</u> for social indicators and a <u>social reporting rationale</u>, with the former being the one with higher expectation for tangible benefits. The <u>social change rationale</u> implies using social indicators to get at the rate and direction of change. The subpurpose of the indicators would be to measure social conditions, supplement economic indicators and measure the <u>change</u> in social conditions over time. In this rationale, the indicators could focus on means as much as goals and be concerned with the subjective (perceptions) as well as objective. There would not be the pervading notion that the indicators are "the" comprehensive set of social outcomes -- rather emphasis would be on

using existing data and concepts to the extent possible.

The least sophisticated use of social indicators is reflected by the social reporting rationale which suggests that the most feasible uses of social indicators are in social reporting and predicting future social events and social life. The emphasis here is on periodic assessments of selected social conditions which might serve as one of several inputs to developing social policy, analyzing social change, or simply in program decision and administration (DeNeufville, 1975). The focus is on more systematic selection, collection, analysis and presentation of the statistics which are now available. In 1975, Land concluded that this rationale represented the most reasonable goal for the use of social indicators give. the then existing capacity to accomplish what was intended.

One of the issues related to the use of social indicators is their quantitative nature. DeNeufville (1975) states that "quantification of social phenomena is a fundamental response of a society when it must make collective decisions" (p. 239). The advantages of this quantitative nature is that the reporter and reader have presumably the same information, that numbers are an easy way to present discrepancies, extract the simple from the complex, and cut down on the judgments which need to be made by the reporter. She notes that in practice, we don't often take action on a problem until we learn how to measure its important features. The disadvantages of quantification concern the falsely implied precision of numbers and the tendency to rely on the conveniently measured aspects of social life.

Henriot (1972) suggested that those who advocate the development of social indicators for use in social policy making hold to the following political assumptions:

1. The concern for quality of life is a highly political concern, hence its measurement has political implications.

2. A political position that is characterized by the belief that the political system can work, an emphasis on the value of rationalization of decision making process by improved information and, acceptance of the goal of "promotion of the public welfare" as legitimate output of the political system (p. 4.).

There is a belief that social indicators will contribute to better decision making in both the public and private sector in policy and administration. From these assumptions springs the social indicators movement as a response to the insufficiency of only economic indicators, the need for adequate trend data and measurement of outcomes for rationalized decision making efforts (p. 8). In response, Bauer (1966) states, "nor is it all clear that 'dehuminization' would necessarily be promoted if our information on culture and the enjoyment of human rights became as good as that on cows and corporate profits" (p. xvii).

Cohen (U.S. Department of Health, Education and Welfare, 1970) in his introduction to Towards A Social Report notes that the purpose of such a report of social conditions is to inform the public, highlight issues and suggest courses of action. Of particular interest is his idea that an informed public will be less threatened by change because they possess a firm notion of where they have been, are, and are going and that social indicators can be used to increase public awareness of conditions which might normally not be exposed.

In looking across this discussion of the uses of social indicators it is apparent that indicators may well go through stages of development in their appropriate use. The initial stage involves a shift from the myriad of social statistics to that of a specially selected indicator which will be "put on trial" for social reporting. The indicator is some how selected to provide an insight to a particular social condition. Overtime and experience in use the indicator develops a history which tells its importance and appropriate use. Based on that history the indicator may be used to characterize social change and perhaps, eventually reach the stage of being used as the basis for public policy.

There are few, if any, indicators which seem to have made it to the final stage of being directly used for public policy as is the case for the "leading economic indicators." The social indicator movement seems to still be in its infancy or pre-adolescence with much yet to be done and learned concerning appropriate use. This lack of development and experience would suggest caution in promising benefits from the use of newly developed indicators and restraint in their use as a basis for public

policy. However, "thermometers and barometers do not explain the weather, but they are useful to us all the same" (Johnson, 1973, p. 303).

## Selecting Social Indicators

Most writers on the topic of social indicators are in agreement that conceptual frameworks or social theories are needed, if not to select appropriate indicators, then to interpret and understand what they are communicating. Such frameworks would provide construct validity to indicators by giving ideas of which factors are important to be measured (with accompanying rationale) and the interrelationships among factors so as to interpret why something is happening or is as it is and to suggest how things might be improved. However, others point out that we can go overboard on the conceptual or theoretical side--we must begin to try some things out and learn from experience if we are ever to have anything and the anything is to be related to conditions as they really are and the change process as it really occurs.

Several authors have suggested criteria, defining characteristics or desirable features of good social indicators. Some of these characteristics are as follows:

1. Normative -- there is a commonly agreed upon direction for the indicator to move which would be considered an improvement in social conditions.
2. Refer to the condition of a major aspect of society--only a limited number of indicators can be dealt with before information "overload" sets in. As the number of indicators is limited, they must cover major or the most significant aspects of social conditions.
3. Ability to aggregate -- it is desirable to aggregate across geographic areas (e.g., local, state, regional, national, international), sectors (e.g., in education, from agriculture, home economics, trade and industrial to vocational education to education to human resource development) and institutions (e.g., types of schools). This type of pyramiding facilitates comparisons and thereby interpretation.

4. Allow cumulation of time series--comparisons over time are a means to interpretation and detecting change, but more importantly as a means for developing predictions to enable planning and anticipation.
5. Allow disaggregation (or cross classification) by other relevant characteristics -- again in order to facilitate interpretation it is useful to make comparisons among different groups of people (e.g., males vs. females, young vs. old, majority vs. minority).
6. Facilitate concise, comprehensive and balanced judgments -- the indicator is relatively free of bias, yet encompasses the major aspects of the social condition in question.
7. Sensitive to change -- the indicator should change as conditions change -- it should be dynamic.
8. Policy relevant -- it should be possible to link the indicator to important issue and decisions -- the indicator should be rationalized in a problem rather than a solution. There must be a real demand for the information if it is to be worth the effort. However, indicators cannot all be limited to present social concerns; because it takes so long to develop and get an indicator used (i.e., 10-20 years), future policy issues have to be anticipated.
9. Reflects outputs -- at least, the indicators should measure the outcomes of social process; only then, would it be logical to add indicators of means to accomplish these outcomes.
10. Measure individuals well-being -- the indicators should reflect the individual's condition, not some abstract society or system. Indicators might be selected for different stages in life and the context at each stage.
11. Measure status as well as distribution -- for some areas of social concern, such as equity, it is as important to have indicators of dispersion as well as measures of the "average" condition.
12. Built into systems of indicators -- communicates the interaction among social conditions (e.g., work indicators and education indicators are relevant to selecting and interpreting vocational education indicators).

13. Clear underlying concepts -- must be consistent idea of what the indicator is measuring; these concepts are foundational to indicators.
14. Reliably measured -- procedures used to produce the indicator must produce consistent results.
15. Available or feasibly developed data -- it must be possible to get the data necessary to derive the indicator in a reasonable manner.
16. Understandable -- general public must be able to understand the indicators strengths and limitations. Indicators may start with general ideas but take on precision as one begins to measure it. Both those who are supportive and in opposition to policies affecting conditions addressed by an indicator must find it acceptable.

Discussions of types of indicators provide a framework for thinking about what might constitute comprehensive coverage of an area. It has already been noted that indicators can be thought of as subjective/objective, input/output and qualitative/quantitative. In Social Indicators, 1980, the U. S. Department of Commerce (1980) selected indicators of three types: system performance, well-being and public perceptions. In the area of education, Rossie and Gilmartin (1980) suggest four types of education indicators: (1) status-descriptive which describe point-in-time aspects of education (e.g., drop out rates, achievement levels), (2) developmental behaviors which are relevant to the developmental stages of learning (e.g., knowledge of occupations, job performance in laboratory), (3) personal investment indicators which describe the voluntary risk of personal resources (e.g., percent taking vocational education, tuition rates), and (4) contextual variables which provide a context for interpreting the other indicators (e.g., parents attitude toward education, student loan availability). Olkinuora (1973) criticized the state of the art of education indicators as being quantitatively dominant, measuring only part of the essential aspects of education and measuring some phenomena very inadequately.

Earlier international work on education indicators by the Organization for Economic Cooperation and Development (1973) suggests more reliance be placed on so-called internal indicators (measured made before or at the

time a student leaves school) because there are so many factors which can influence students after they leave school resulting in difficult interpretation. More recently, they have advocated the need to also include external indicators as a way to communicate the impact of education for purposes of substantiating its contribution to improving social conditions.

There is some feeling of relief from responsibility in the advice that precise selection of indicators is less important than studying the results over time -- that we will improve the indicator as they come under scrutiny. There is no end to a possible list of indicators, therefore, the basic selection criteria of being parsimonious and exhaustive are in conflict. And, value free indicators simply do not exist -- rather it may be best to strive for indicators which represent a diversity of orientations.

## Developing Social Indicators

DeNeufville (1975) suggests that "the design of an indicator which is both relevant and practical to collect or apply is highly interactive" (p. 240). The interaction is among the methodologists and users with the indicator ever evolving. From her work she concludes the following findings about developing useful indicators: (1) may require 20-30 years to refine concept, measure and use of an indicator, (2) somebody or situation must want the indicator, (3) the indicator must be grounded in the models and concepts of the users and best theory available about the problem, (4) the indicator should not be fixed over time, rather treat as evolving, (5) consider that indicators are interactive in concepts, methods of measuring and their use, (6) there will be great pressure on an indicator if it is used -- usually means it will improve, (7) if an indicator is to be trusted, it will be required to have an institutionalized life partially removed from every day politics.

Several of the authors reviewed had different perspectives about the general approach to developing social indicators. DeNeufville (1975) categorized these approaches as follows: (1) Task is to select the best set of measures and publish them with the user being responsible for interpretation -- the steps in the process are to select topics, analyze issues and

trends related to topics, assess available data on issues and devise indicators, (2) task is to work out new methods to measure the hard to quantify (e.g., job satisfaction, general well-being), (3) task is to design a theoretical framework and then deduce best indicators -- use input/output analysis, production functions, etc., to identify major variables and relationships -- may design very specific models for specific social processes, and (4) task is to replicate previous studies to quickly develop some information which will reflect trends (i.e., change).

As an illustration of what is involved, Biderman and Drury (1976) used the third approach noted above on the area of quality of employments. The steps suggested in developing indicators were: (1) define the domain of investigation -- they used working conditions (i.e., characteristics of job), effectiveness (i.e., employee, employer, and societal perspectives such as job satisfaction, physical health, drinking behavior were considered), and quality of employment (i.e., judgments about impact of working conditions on effectiveness), (2) making value assumptions explicit (i.e., in their work they considered employees, employer, and society (community)), (3) differentiating the domain of investigation -- basic dimensions of each domain were approached by examining existing theory and empirical investigations, (4) deciding to select a set of standards or try to fit an existing, generally accepted model, and (5) devising how to make the complexity inherent in the reality of the domain simple to communicate and understand (e.g., breaking continuum of values into ranges and assigning labels).

The development of indicators can also be detected by examining the format of presentations where indicators have been published. In general, these formats seem to involve identifying the social realms to be covered, selecting valid measures, sometimes setting standards or goals (indicating progress) and narrative analysis and interpretation of indicators. As already suggested, there is mixed feelings about the necessity of the analysis section with some believing it is best left up to the readers and others noting that it is very important that the analyses be present to prevent misinterpretation (U. S. Department of Health, Education, and Welfare, 1970). In Towards A Social Report, 1970, the U. S. Department of Health, Education, and Welfare (1970) uses the format of indicator,

measurement of change (i.e., relevant causal factors), analysis (i.e., specific measures used) and goals (for the specific measures). The format of presentation suggested by the Organization for European Cooperation and Development (1976) includes the headings: social concern, subconcerns, indicators, validity judgment (i.e., fully corresponds, corresponds to only part of the concern, and approximation.)

In developing social indicators, policy implications must be attended to if the indicators and their use are ever to emerge. DeNeufville's (1975) notes about the following implications give some sense of the process which is being entered into when developing social indicators: (1) plan in terms of systems of production and use of data, not in terms of an individual indicator, (2) process will take at least 10 years and a massive effort, (3) be opportunistic in linking indicator development to new policies and programs, (4) look to the new administration or legislature for impetus and not the old, (5) require a professional style in the agency developing and producing the indicators, (6) regularize the concepts, methods and standards for producing the indicators -- these must be legitimated and changed only in a very public way, (7) develop a set of measures relating to each indicator with at least one resulting from original data collection, (8) emphasize public relations during the development process as a means to inform groups of users, (9) mobilize and organize users to support indicator development and (10) institutionalize the production and use of the indicators as a way to insure continuity.

By way of conclusions about indicator development, it appears the development of social indicators and there use is a lengthy and complex process. As DeNeufville (1975) suggests, if they are to be used and convince people, they must validly represent concepts and fit generally accepted models, be coupled with policy perspectives and institutional arrangements for considering the indicators publically. The process of development needs to be very conscious with built in interaction of producers and users. Provisions have to be made for providing continuity for indicators and at the same time for adding additional indicators or revising old ones. In developing the analysis of indicators, it must be recognized that there is a fine line between explantion of a measure in statistical terms and interpretation in political terms. Somehow the indi-

cators must be insulated from manipulation for political interests and yet not be isolated from the political context.

## Summary

From this review of past and present work on the development of social indicators, some implications can be drawn for this study which has as its purpose the identification of social indicators for vocational education in Minnesotsa. First, it is evident that one need not start from "scratch" -- there is a substantial body of knowledge about social indicators, although not specific to vocational education.

From the past experience of others, it seems social indicators pass through several "stages of development." These stages involve: (1) raising a potential indicator above a series or cluster of related statistics, (2) placing the indicator on-trial as to importance and use, (3) developing a history of use or experience with the indicator and (4) appropriately using the indicator in decision making. Past experience with social indicators also suggests that a start must be made some place if "good" indicators are to ever evolve. Much of the basis for accepting, rejecting or modifying an indicator can come only through experience with its use. All this suggests that one is likely into a several years process (i.e., at least 10) in developing appropriate and used indicators for vocational education.

In the end, prudence would imply that these indicators might best be touted as useful for social reporting purposes -- periodic assessment of the condition and analysis of change in vocational education as one input toward improved policy and administrative decisions. While these indicators represent only one input, and then only those aspects which can be quantified, perhaps the note issued by the U. S. Department of Commerce in Social Indicators 1976 has bearing, "But if statistical data do not tell the whole story, they do provide much of the factual 'warp and woof' with which a comprehensive picture of our condition as a society may be woven" (p. xxii). So too for vocational education indicators.

While there is not even complete uniformity in definition, social indicators are thought to be quantitative in nature and measure important

aspects of social life. In this study, what is sought is a set of quantifiable measures of important aspects of vocational education in Minnesota.

# CHAPTER III.

# DESIGN OF STUDY

An early decision was that the group to begin with in selecting indicators for the purposes intended was those who are responsible for program management -- the vocational education administrators in local schools and the Minnesota Department of Education. These individuals should have a "best sense" of what is important, understandable, and feasible. Also in the end, they are likely to be primary users of the indicators.

## Sample

The sample consisted of all secondary, post secondary and adult vocational education administrators in local schools in Minnesota and all members of the Division of Vocational-Technical Education, Minnesota Department of Education, in the fall of 1978. As such, the sample is really the same as the population, a fact which has implications for selection of statistical analysis procedures.

## Questionnaire

A questionnaire was constructed to allow members of the sample to rate the importance of a list of characteristics of vocational education. The list of characteristics was developed by reviewing the previously identified studies by the MRDC, existing data collection systems in the state (i.e., follow-up systems), state and federal legislation and the experience of MRDC staff members in providing technical assistance to those doing planning and evaluation. The list was finally edited to contain 70 characteristics. Following the model of vocational education developed in an earlier research study (Copa, 1981), the characteristics were subdivided into four categories: characteristics of enrollees in program (inputs), characteristics of program leavers (outputs), characteristics of program (process), and characteristics about need for program (context). Respondents were asked to respond to each characteristics on a scale from 1 (not necessary) to 7 (essential) in terms of importance in planning, reviewing and providing public information about vocational education.

Space was provided to add characteristics and comments at the end of the questionnaire. Finally, respondents were asked to select the five most important characteristics. A copy of the complete questionnaire is shown in Appendix I.

## Data Collection

Questionnaires with a cover letter were mailed to members of the sample. Two follow-up mailings were made to non-respondents. Data was collected between November, 1978 to March, 1979. The number of vocational education administrators in each sub-group of the sample and their response rates are shown in Table 1. Overall, the return rate was 88.6 percent.

Table 1

Subgroups of Sample and Response Rate

| | Number of survey mailed | Number of responses | Percent |
|---|---|---|---|
| State department staff | 48 | 44 | 91.6 |
| Secondary administrators | 84 | 74 | 88.0 |
| Postsecondary administrators | 33 | 29 | 87.9 |
| Adult administrators | 29 | 25 | 86.2 |
| Total | 194 | 172 | 88.6 |

# CHAPTER IV.

# RESULTS OF STUDY

The section on results is divided into two parts, the first having to do with findings of the study and the second focusing on the quality of data collected.

## Findings of Study

In order to generally indicate the importance of the four categories (i.e., input, process, output, context) of characteristics of vocational education, the characteristics which had a mean importance rating of 5 or higher by at least one of the four subgroups of administrators are presented in Tables 2-5 (one table for each category). Ratings for all characteristics by each subgroup are shown in Appendix III.

Since the search was primarily for the most important set of characteristics, the results of the questionnaire item asking for the "five most important characteristics" was used for further analysis. The rank order of each characteristic was derived by calculating the percent of respondents who included the characteristic as one of the top five characteristics among all of those which were rated. The ten highest ranking characteristics for each subgroup are shown in Tables 6-9. The mean importance rating and standard deviation of rating for each subgroup are also shown. A comparison of the rank order of characteristics among the subgroups is shown in Table 10. As can be seen, the subgroups were very consistent in their mean ratings; only 16 characteristics were used to include the top ten characteristics for all subgroups. Variations between subgroups occurred only toward the bottom of the listing of top characteristics.

## Quality of Data

Quality of data was assessed in the following ways: (1) completeness of response rates, (2) consistency of retest at a later time, (3) sensitivity of questionnaire, (4) contrast of findings with other groups, and

Table 2

Important Characteristics of Enrollees in Program As Rated by Vocational Education Administrators

| Characteristic | Mean Rating | | | |
|---|---|---|---|---|
| | State department | Secondary | Post secondary | Adult |
| Attendance of enrollee during program | 5.2 | 5.9 | 5.7 | 5.7 |
| Performance of enrollee in program | 6.1 | 6.3 | 6.1 | 6.4 |
| Portion of program completed by enrollee | 5.8 | 5.9 | 5.8 | 5.3 |
| Achievement level of enrollee | | | | 5.0 |

(5) conference with respondents. The response rates have already been presented. They were judged to be sufficiently high to negate large non-response bias.

## Retest Reliability

In order to assess the stability of importance ratings over time, a random stratified sample of the original group of respondents was asked to complete the questionnaire again after approximately two months. Stratification was by subgroups already mentioned. Each was sampled proportional to their size relative to the total of all subgroups. The resulting sample size for the retest was 86 of which 52 or 60.5 percent responded. Table 11 shows the amount of absolute change in ratings (either plus or minus) between first and second ratings across all characteristics. As can be seen, 75 percent of the ratings were exactly the same or a change of only one unit. Another indicator of stability in ratings over time is a comparison of rank order of ratings between original rating and retest. This information for the top ten characteristics in the original rating is shown in Table 12. Combining these two forms of evidence, the ratings appear fairly stable over at least a short time.

Table 3

Important Characteristic of Programs As Rated By

Vocational Education Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Occupation(s) for which program is provide training | 6.2 | 6.3 | 6.2 | 6.5 |
| Number of program graduates | 6.1 | 5.6 | 5.6 | 5.8 |
| Number of enrollees completing their objectives (but not graduating) | 5.4 | 5.2 | 5.2 | 5.7 |
| Number of enrollees who withdraw before completion | 5.2 | 5.0 | | 5.2 |
| Reasons for enrollee withdrawal | 5.6 | 5.3 | | 5.8 |
| Program cost | 5.6 | 5.9 | 5.8 | 5.7 |
| Program benefits beyond placement | 5.0 | 5.5 | | 5.9 |
| Occupations selected by program graduates | 5.9 | 5.8 | 5.7 | 5.7 |
| Availability of qualified staff and/or facilities and equipment | 6.0 | 5.6 | 5.8 | 6.2 |
| Number and location of similar programs | 5.1 | | 5.3 | 5.1 |
| Availability of student support services (e.g., guidanace remediation, placement) | 5.5 | 5.4 | 5.3 | 5.6 |
| Articulation with other programs (i.e., students able to transfer work to another program or institution). | 5.3 | 5.8 | | 5.9 |

Table 3 (Continued)

Important Characteristic of Programs As Rated By

Vocational Education Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Student time required to complete program | 5.2 | 5.4 | 5.5 | 5.5 |
| Purpose of program other than training for job entry | | | | 5.5 |
| Capacity of program (enrollees) | | | 5.2 | 5.6 |

Table 4

Important Characteristics of Program Leavers As Rated by

Vocational Education Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Number of graduates employed | 6.0 | 6.1 | 5.9 | 5.9 |
| Number of graduates employed in occupation relates to program | 6.4 | 6.1 | 6.1 | 6.2 |
| Number of unemployed (looking for work) graduates | 5.9 | 5.0 | 5.7 | 5.9 |
| Number of graduates employed full-time | 6.1 | 5.9 | 5.7 | 5.9 |
| Number of graduates unavailable employment | 5.3 | 5.2 | 5.0 | 5.0 |

Table 4 (Continued)

Important Characteristics of Program Leavers As Rated by

Vocational Education Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Time between graduation and first job | 5.0 | | | 5.0 |
| Salary of graduates | 5.6 | 5.5 | 5.4 | 5.8 |
| Rate of advancement of graduates | 5.8 | 5.3 | | 5.7 |
| Satisfaction with present job | 5.8 | 5.5 | 5.2 | 5.6 |
| Satisfaction with job opportunities | 5.6 | 5.6 | 5.3 | 5.7 |
| Satisfaction with curriculum | 6.0 | 5.8 | 5.6 | 5.7 |
| Satisfaction with teachers | 5.8 | 5.3 | 5.7 | 5.7 |
| Satisfaction with program facilities and equipment | 5.6 | 5.5 | 5.7 | 5.5 |
| Satisfaction with placement services | 5.6 | 5.4 | 5.4 | 5.3 |
| Satisfaction with counseling services | 5.3 | 5.2 | 5.2 | 5.3 |
| Number of graduates who would enroll in program again | 5.8 | 5.5 | 5.2 | 6.2 |
| Employer satisfaction with quality of graduate's work | 6.6 | 6.4 | 6.4 | 6.6 |
| Employers satisfaction with graduate's personal characteristics in relation to work | 5.9 | 5.7 | 5.7 | 5.5 |
| Number of graduates enrolled in further education | | 5.3 | | 5.5 |
| Number of graduates enrolled in related programs in further education | | | | 5.4 |

Table 5

Important Characteristics About Need for Program As Rated by Vocational Education Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Projected total employment in occupations related to program | 5.9 | 6.0 | 5.9 | 6.3 |
| Projected job openings in occupations related to program | 6.2 | 6.2 | 6.3 | 6.4 |
| Number of persons wanting training in occupations related to program | 5.7 | 5.8 | 5.6 | 5.4 |
| Existence of other sources of training (e.g., on-job, private schools) | 5.1 | 5.2 | 5.2 | |
| Accessibility of other sources of training (e.g., distance, cost, entrance requirements, cost) | 5.0 | 5.0 | 5.1 | |
| Effectiveness of other sources of training (e.g., number of graduates, placement rates | 5.2 | 5.2 | 5.3 | 5.2 |
| Cost of other sources of training | 5.1 | 5.1 | 5.1 | 5.0 |
| Community attitudes towards program | | 5.2 | | 5.1 |

Table 6

Most Important Characteristics of Vocational Education for Vocational Education Staff of Minnesota Department of Education

| Characteristic | Percent of respondents citing characteristics as most important | Rating of characteristic | |
|---|---|---|---|
| | | Mean rating | Standard deviation |
| Employer satisfaction with quality of graduate's work | 46.5 (1) | 6.6 (1) | .8 |
| Number of graduates employed in occupation related to program | 41.9 (2) | 6.4 (2) | .8 |
| Projected job openings in occupations relted to program | 37.2 (3) | 6.2 (3) | .9 |
| Program cost | 20.9 (4) | 5.6 | 1.3 |
| Number of graduates employed | 20.9 (4) | 6.0 (5) | 1.4 |
| Occupation for which program is designed to provide training | 18.6 (5) | 6.2 (3) | 1.0 |
| Number of program graduates | 18.6 (5) | 6.1 (4) | 1.1 |
| Satisfaction with present job | 18.6 (5) | 5.8 | 1.0 |
| Number of graduates who would enroll in program again | 18.6 (5) | 5.8 | 1.4 |
| Employer satisfaction with graduate's personal characteristics in relation to work | 18.6 (5) | 5.9 | 1.2 |

Note. N=43

Table 7

Most Important Characteristics of Vocational Education for Secondary Vocational Education Program Administrators

| Characteristic | Percent of respondents citing characteristic as most important | Rating of characteristic: Mean rating | Rating of characteristic: Standard deviation |
|---|---|---|---|
| Employer satisfaction with quality of graduate's work | 47.3 (1) | 6.4 (1) | 1.1 |
| Performance of enrollee in program | 31.1 (2) | 6.3 (2) | 1.0 |
| Projected job openings in occupations related to program | 31.1 (2) | 6.2 (3) | .9 |
| Number of graduates employed in occupation relted to program | 28.4 (3) | 6.1 (4) | 1.0 |
| Occupation(s) for which program is designed to provide training | 23.0 (4) | 6.2 (3) | .9 |
| Number of graduates employed | 21.6 (5) | 6.1 (4) | 1.0 |
| Attendance of enrolee during program | 17.6 (6) | 5.9 (6) | 1.3 |
| Articulation with other programs (i.e., students able to transfer work to another program or institution) | 16.2 (7) | 5.8 | 1.1 |
| Projected total employment in occupation related to program | 14.9 (8) | 6.0 (5) | 1.1 |
| Program cost | 13.5 (9) | 5.9 (6) | 1.2 |

Note. N = 74

Table 8

Most Important Characteristics of Vocational Education for Post Secondary Area Vocational-Technical Institute Directors

| Characteristic | Percent of respondents citing characteristic as most important | Rating of characteristic | |
|---|---|---|---|
| | | Mean rating | Standard deviation |
| Employer satisfaction with quality of graduate's work | 41.4 (1) | 6.4 (1) | 1.0 |
| Availability of qualified staff and/or facilities and equipment | 37.9 (2) | 5.8 (6) | 1.6 |
| Number of graduates employed in occupation related to program | 31.0 (3) | 6.1 (4) | 1.5 |
| Number of graduates employed | 27.6 (4) | 5.9 (5) | 1.5 |
| Projected job openings in occupations related to program | 27.6 (4) | 6.3 (2) | 1.0 |
| Occupation(s) for which program is designed to provide training | 24.1 (5) | 6.2 (3) | 1.4 |
| Performance of enrollee in program | 17.2 (6) | 6.1 (4) | 1.5 |
| Program cost | 17.2 (6) | 5.8 (6) | 1.6 |
| Satisfaction with present job | 17.2 (6) | 5.2 | 1.4 |
| Satisfaction with curriculum | 17.2 (6) | 5.6 | 1.4 |

Note. N=29

Table 9

Most Important Characteristics of Vocational Education for

Adult Vocational Program Administrators

| Characteristic | Percent of respondents citing characteristic as most important | Rating of characteristic | |
|---|---|---|---|
| | | Mean rating | Standard deviation |
| Employer satisfaction with quality of graduate's work | 48.0 (1) | 6.8 (1) | .6 |
| Number of graduates employed | 40.0 (2) | 5.9 (6) | 1.6 |
| Occupation(s) for which program is designed to provide training | 32.0 (3) | 6.5 (2) | .9 |
| Number of graduates employed in occupation relted to program | 32.0 (3) | 6.2 (5) | .8 |
| Projected job openings in occupations related to program | 28.0 (4) | 6.4 (3) | .7 |
| Number of graduates who would enroll in program again | 24.0 (5) | 6.2 (5) | 1.2 |
| Performance of enrollee in program | 20.0 (6) | 6.4 (3) | .8 |
| Attendance of enrollee during program | 16.0 (7) | | |
| Availability of qualified staff and/or facilities and equipment | 16.0 (7) | 6.2 (5) | .9 |
| Employer satisfaction with graduate's personal characteristics in relation to work | 16.0 (7) | 5.5 | 1.6 |

Note. N = 25

Table 10

Rank Order of Ten Most Important Characteristics

of Vocational Education for Subgroups of Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Employer satisfaction with quality of graduate's work | 1 | 1 | 1 | 1 |
| Number of graduates employed in occupation related to program | 2 | 3 | 3 | 3 |
| Projected job openings in occupations related to program | 3 | 2 | 4 | 4 |
| Program cost | 4 | 9 | 6 | |
| Number of graduates employed | 4 | 5 | 4 | 2 |
| Occupation(s) for which program is designed to provide training | 5 | 4 | 5 | 3 |
| Number of program graduates | 5 | | | |
| Satisfaction with present job | 5 | | 6 | |
| Number of graduates who would enroll in program again | 5 | | | 5 |
| Employer satisfaction with graduates personal characteristics in relation to work | 5 | | | 7 |
| Performance of enrollee in program | | 2 | 6 | 6 |
| Attendance of enrollee during program | | 6 | | 7 |
| Articulation with other programs (i.e., students able to transfer work to another program or institution) | | 7 | | |

Table 10 (Continued)

Rank Order of Ten Most Important Characteristics of

Vocational Education for Subgroups of Administrators

| Characteristic | State department | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Projected total employment in occupation related to program | | 8 | | |
| Availability of qualified staff and/or facilities and equipment | | | 2 | 7 |
| Satisfaction with curriculum | | | 6 | |

Table 11

Change in Importance Ratings with Retesting

| Amount of change in rating | Percent of occurrence |
|---|---|
| 0 | 37.8 |
| 1 | 36.9 |
| 2 | 13.5 |
| 3 | 6.5 |
| 4 | 2.6 |
| 5 | .9 |
| 6 | 1.8 |

Note. Based on 52 responses on retest.

Table 12

Change in Ranking of Top Ten

Characteristics of Vocational Education with Retesting

| Characteristic | Original | Retest |
|---|---|---|
| Employer satisfaction with quality of graduate's work | 1 (6.6) | 1 (6.5) |
| Occupation for which progream is designed to provide training | 2 (6.4) | 5 (6.2) |
| Projected job openings in occupations related to program | 3 (6.3) | 3 (6.2) |
| Performance of enrollee in program | 4 (6.3) | 2 (6.4) |
| Number of graduates employed in occupations related to program | 5 (6.3) | 9 (6.0) |
| Number of graduates | 6 (6.1) | 7 (6.1) |
| Projected total employment in occupations related to program | 7 (6.0) | 16 (5.8) |
| Availability of qualified staff and/or facilities and equipment | 8 (6.0) | 12 (5.9) |
| Number of graduates employed full-time | 9 (5.9) | 15 (5.8) |
| Occupations selected by program graduates | 10 (5.9) | 6 (6.1) |

Note. Original is based on 256 respondents; retest on subsample of 52 respondents. Numbers in parentheses are mean ratings.

## Sensitivity of Questionnaire

The sensitivity of the questionnaire to judgments of administrators was assessed by examining the proportion of mean ratings which fell into the various categories from 1 (not necessary) to 7 (essential). The results of this assessment for each of the four subgroups are shown in Table 13. The model category is 5-5.99. However, since the distribution is fairly normal and some characteristics had mean ratings in the extreme categories (1-1.99 and 6-6.99), the questionnaire was judged to be sufficiently sensitive.

Table 13

Variation in Mean Importance Ratings for

Characteristics by Administrators

| Range of mean ratings | Number of characteristics | | | |
|---|---|---|---|---|
| | State department | Secondary | Post secondary | Adult |
| 1-1.99 | 2 | 2 | 6 | 4 |
| 2-2.99 | 6 | 8 | 6 | 4 |
| 3-3.99 | 5 | 3 | 8 | 10 |
| 4-4.99 | 16 | 13 | 15 | 8 |
| 5-5.99 | 31 | 37 | 30 | 36 |
| 6-6.99 | 10 | 7 | 5 | 8 |

## Consistency with other Groups

As already stated, vocational education administrators were chosen as the best group to begin with in selecting indicators about vocational education. The reason is that their responsibility for managing these programs should put them in a position to consider needs of clients (e.g., students, employers, parents), those delivering the services (e.g., teachers, counselors, subordinate administrators) and those providing resources (e.g., legislature, school board, taxpayers). In order to check on the consistency of the judgment of administrators with some of these other interested groups, two other groups were queried using the same questionnaire and data collection strategy as described for administrators. These groups were the Minnesota State Advisory Council for Vocational Education (generally representing parents and employers) and teacher educators (those preparing and updating the staff of vocational education programs).

The questionnaire was sent to all State Advisory Council members (24) and all teacher educators in Minnesota's institutions which have vocational

teacher education programs (110 teacher educators). The response rates were 66.7 and 67.3 percent, respectively. The rank order of the top ten characteristics, based on the mean of the rank order for all four subgroups of administrators, is contrasted with the rank order of these same characteristics for the State Advisory Council and teacher educators in Table 14. In general, the rankings for teacher educators are very consistent with those of administrators. However, while the rankings of the very top rated characteristics for administrators were in the top ten characteristics as rated by State Advisory Council members, there were major inconsistencies in the lower ranked characteristics.

## Conference with Respondents

In order to test if the ratings of characteristics by administrators were being interpreted correctly and that other relevant information about context was getting necessary consideration, a small stratified random sample of each subgroup of administrators was asked to participate in four (one for each subgroup) one-half day mini-conferences to review the results of the survey and provide their reactions. In essence, the administrators were being asked, "Is this what you think you told us?" The sample of administrators consisted of 8-10 individuals; stratification was used to get representation by school size and geographic area of the state within each subgroup. Conference participants were asked to complete a questionnaire before coming to the conference. The questionnaire asked two questions: (1) What are the five or six most pressing problems or issues you face over the next two years in managing the vocational education programs for which you have responsibility? and (2) What information would be most helpful in resolving these problems or issues? These questions were thought to be another way of asking the questions posed on the original questionnaire; the pre-conference questionnaire was also used as a strategy to generate some forethought about the topics to be discussed in the mini-conferences. The agenda of the conference was as follows: (1) discussion of individual answers to the pre-conference questionnaire, (2) presentation of survey results and participant reactions, (3) discussion of next steps in the process of developing vocational education indicators. The results of these mini-conferences held during March, 1980, are presented below for each subgroup of administrators.

Table 14

Rank Order of Most Important Characteristics for Administrators Compared to State Advisory Council for Vocational Education and Teacher Educators

| Characteristics | Vocational administrators | State advisory council members | Teacher educators |
|---|---|---|---|
| Employer satisfaction with quality of graduates work | 1 (45.8%) | 2 (37.5%) | 2 (39.7%) |
| Number of graduates employed in occupation related to program | 2 (33.3) | 3 (31.3) | 3 (33.8) |
| Projected job openings in occupations related to program | 3 (31.0) | 1 (43.8) | 4 (32.4) |
| Number of graduates employed | 4 (27.5) | | 6 (25.0) |
| Occupation(s) for which program is designed to provide training | 5 (24.4) | 5 (18.8) | 1 (50.0) |
| Performance of enrollee in program | 6 (20.0) | | 5 (26.5) |
| Availability of qualified staff and/or facilities and equipment | 7 (19.4) | | 9 (16.2) |
| Satisfaction with present job | 8 (15.3) | | |
| Program cost | 9 (14.9) | | 7 (23.5) |
| Employer satisfaction with graduate's personal characteristics in relation to work | 10 (12.1) | | |
| Projected total employment in occupations related to program | | 3 (31.3) | |

Table 14 (Continued)

Rank Order of Most Important Characteristics for Administrators Compared to State Advisory Council for Vocational Education and Teacher Educators

| Characteristics | Vocational administrators | State advisory council members | Teacher educators |
|---|---|---|---|
| Availability of student support services (e.g., guidance, remediation, placement) | | 4 (25.0) | |
| Reasons for enrollee withdrawal | | 5 (18.8) | |
| Program benefits beyond placement | | 5 (18.8) | |
| Salary of graduates | | 5 (18.8) | |
| Number of persons wanting training in occupations related to program | | 5 (18.8) | |
| Number of graduates who would enroll in the program again | | | 8 (20.6) |
| Achievement level of enrollee | | | 10 (14.7) |

Note. Vocational administrators ratings based on 171 respondents, State Advisory Council on 16 respondents, and teacher educators on 74 respondents. Numbers in parentheses are percent of respondents selecting characteristic as one of the five most important.

State department of education staff. The conference with a selected sample of state department of education staff members from the Division of Vocational-Technical Education resulted in identifying the problems, issues, and information needs shown in Appendix V. The basic categories of information needs were: (1) goals and scope of vocational education, (2) policies and procedures governing vocational education and their process of development, (3) credible program cost and benefit data, (4) plans and accomplishments of other agencies affecting vocational education, (5) needs of business and industry for occupational training, (6) needs of students to be served in vocational education, (7) enrollment trends, (8) complete follow-up information, (9) changes in instructional software, particularly for computer and video hardware, and (10) advice of advisory committees and its impact.

The discussion of results of the survey concerning important factors to planning, reviewing and providing public information about vocational education in Minnesota resulted in several concerns. First, there was a concern about how the results could be used by program managers and supervisors in the state department of education--would it satisfy some immediate information needs. The general response was that use of the most important factors on which there was consensus across administrative groups should elevate the discussion of managers from questions of "what is the situation" to those of "what is acceptable" and "what should be done."

A second concern was that several of the indicators or factors judged most important appear to be correlated in terms of the information provided (e.g., number of graduates employed, number of graduates employed in related occupations). It was suggested that the indicator concerning related placement was most specific and critical. Another related concern was that the most important indicators do not seem to reflect a concern about those students who were not successful in vocational education programs (e.g., dropouts).

A concern provoking a good deal of discussion was whether or not the fact that there was a high degree of consensus on important factors among administrative groups meant that these were the "right" factors. Perhaps these are the factors which are simply talked about a lot or where a false set of expectations have been built over time with little serious questioning by administrators. Some conclusions were that at least admi-

nistrators were consistent in their perceptions and that administrators do have a responsibility for sorting out what is "right" in vocational education at the local and state level. It also seemed apparent that differences between factor ratings for various groups of administrators (secondary vs. post secondary vs. adult) were as would be expected. For example, adult program administrators attached a lower rating to employment opportunities which would be expected since most of their students are already employed.

An interesting perspective emerged concerning the highest rated factor of employer satisfaction with quality of graduate's work. One interpretation of this factor is that it is not a reflection of more concern about employer in contrast to student, but rather, this factor is a very broad, encompassing kind of measure. It reflects many of the other factors such as instructors doing their jobs, curriculum quality and student learning.

Finally, there was feeling that it would be desirable to have some stability in indicators selected as most important. Using the analogy of a thermometer, it was suggested that if the indicators are to become as accepted in measuring the quality of vocational education as the thermometer for temperature, it would take several years with the same indicator to get a high degree of understanding and acceptance.

Secondary vocational education administrators. Faced with the question of important information needs to assist in making decisions about problems and issues in managing secondary vocational education programs, secondary program administrators list the following types of infosrmation: (1) effects of declining enrollment on participation in vocational education, (2) other than presently used sources of funding, (3) occupational demand, (4) student and parent interest in programs, (5) purpose of secondary vocational education, (6) effects of economy on enrollments in vocational education, and (7) new research findings about vocational education. More details of the list are presented in Appendix V.

The discussion which followed raised several concerns bearing on the process of selecting a set of vocational education indicators relevant to secondary vocational education programs. First, the consistent ratings of importance of the factors in the survey of several administrative groups tends to show that, generally, vocational eduation administrators think

alike. However, it was felt that the important rating might be different if administrators responsible for more than vocational programs were queried--further, that this latter group would add other factors to the list. It was predicted that these administrators would be more concerned about the perceptions of students rather than employers. To check this possibility, it was suggested that the factors questionnaire (with perhaps a changed format) be used with a more general group of administrators but also with students, parents and advisory committee members. A special concern was that if parents are surveyed, efforts be made to insure that a representative group of parents respond. Based on experience, it was predicted that the parents of students who tend to take vocational education courses are more "quiet" and less likely to respond quickly. The expected most important concern of parents about vocational education is likely to be, "Will the son or daughter get a job and will the job have a future?"

Second, it was suggested that another area of effects of secondary vocational education not well covered by the questionnaire concerns the effects of being in vocational education on feelings about school, performance in other subjects, and family life. The administrators involved felt that being in vocational education classes for some students was related to being more excited about school, and feeling better about themselves. These comments lead to a discussion of how vocational education fits into the rest of the school at the secondary level. The dicotomy between vocational and academic shouldn't be there; the view held was that it is all preparation for life. However, it was agreed that it would be difficult to totally get away from the notion that vocational education is, foremost, preparation for work; employability is needed as an objective if local programs are to meet federal and state legislative intent.

Asked about the high importance evident for the factor (indicator) concerning related placement of graduates, the secondary administrators suggested that a secondary vocational education program is preparing for a cluster of occupations -- each program might have many "related" occupations. While students might learn specific skills in vocational education program, they are not for specific occupations; rather, they might be used in a wide variety of occupations. The identification of related occupations for a particular program would tend to be a long and frustrating process -- some of the occupations might not even exist at present.

Third, it is difficult to reconcile indicators which might be appropriate for the program objective of occupational preparation with that of occupational exploration. It was felt that the factors used in the questionnaire were very limited in their address of occupational exploration effects. Some of the questions concerning effects which might be asked are: How did the former student decide on a job? Is the former student happy with their job? Did the vocational education program present an accurate picture of the job? Even so, responses will be difficult to interpret because students often take more than one type of vocational education course, spend different lengths of time in program areas, may not know which courses are "vocational" and which are not, and take a lot of other courses in their high school program in addition to vocational education.

Fourth, it was pointed out that it is difficult to apply the indicators judged most important to consumer homemaking programs yet these are a part of vocational education.

A serious question posed concerning the process of selecting vocational education indicators was whether to first spend more time on working out the purpose of vocational education and, only then, to proceed further in selecting indicators. One approach might be to pose indicators separately for each of the existing three purposes of secondary vocational education programs--occupation exploration, job preparation, further education preparation. The counter point was that the survey results represent the present interpretation of the purpose of vocational education.

In general, the group of secondary administrators felt that there were very significant ramifications to selecting and using a set of indicators--that they wanted to think things through more carefully before being completely comfortable in endorsing a particular group of indicators. After first proposing that the indicators and their format of presentation might be different for each audience, they acknowledge that the same basic information should be used for planning, review and public information. They suggested another query of vocational education administrators using an open-ended questionnaire asking for "the five most important things to know about vocational education for use in forming an index like the consumer price index." Other school administrators and parents as well as students might also be surveyed in this way. The additional information

gained would be that: (1) those responding would have a clearer idea of how the information would be used and (2) recommendations would come in the respondent's "own words."

Area vocational-technical institute directors. The results of discussing the questions of future problems and issues and subsequent information needs with a selected group of area vocational-technical institute directors is also shown in Appendix V. Some ideas which emerge from the information needs list include: (1) local area information as well as statewide and even national information, (2) information about past, present, and future, (3) information about what is being done, what is not being done and about the consequences of not doing what is now done, (4) information from and about the people to be served and the industries to be served, (5) information which is consistent among educational systems, (6) information about the mission of each educational system, (7) information about the constraints to improve system performance, and (8) information about how to make better use of information already available.

The discussion during and following the presentation of the results of the survey of importance of various characteristics of vocational education presented earlier in this report had several different focuses. First, issue was raised with the survey finding that job placement and employer satisfaction were more important than student satisfaction with the education program they attended (e.g., Who is the most important "customer"--the student or industry?). It was noted that the emphasis on employer satisfaction may be the result of a traditional emphasis in post secondary vocational education (one which has been created by vocational educators themselves), but may not fully represent the best future direction. Comment was made that "satisfaction" is very difficult to measure, is always "relative," and is, therefore, not easily interpreted. Often proxy measures such as "Would you enroll in the program again?", must be used to provide information about an area such as student satisfaction with a program. Many of these proxy measures are fraught with limitations (e.g., in the case of would you enroll again, the former student needs to admit to a poor decision in order to respond "no").

Another area of discussion centered on deciding how much is enough. For example, by using an indicator such as employer satisfaction with the

quality of a graduates work, is it being implied that the goal is to have 100 percent of the employers respond positively? Is this what should be communicated? A related concern is that by adapting an indicator such as employer satisfaction, the specification of program effectiveness is being delegated to someone external to the educational system. Is this the way it should be? Is this consistent with how other educational systems (e.g., colleges and universities) are evaluated? Should vocational education attempt to be different in communicating its effectiveness? Don't these other institutions put more emphasis on evaluating their process rather than products? Is this the direction vocational education should be moving? Do students come to post secondary area vocational-technical institutes with different expectations for the benefits of their education than students entering other educational systems?

Frustration was evident in comments that information about several of the most important indicators identified in the survey had already been used, especially with the state legislature, in seeking support for post-secondary programs but had been seemingly less than satisfactory. It is as if something important is still missing in the story being communicated to those responsible for the survival of the vocational education system. Question was raised concerning whether there might be still additional factors which would provide a more comprehensive picture to the public. It was suggested that groups such as the legislature, general public and students be queried to see if new, additional factors could be uncovered. Another insight was that quantitative data such as provided by the suggested indicators needed to be supplemented by more qualitative evidence as might come from personal testimony by students or employers.

Concern with information needs of the legislature lead to raising the issue that different indicators may be useful for different purposes and users. For example those providing resources may have different information priorities than those responsible for managing a vocational education program. In turn, the accountability information demands of legislation may be different from the implementation information needs of a local school administrator or teacher. Also, are there not a myriad of specific questions for which very specific information is needed rather than broad vocational education indicators?

Adult vocational education directors. In response to the question of information needs to deal with problems and issues highlighted during the discussion, the adult vocational education directors indicated a need for information about: (1) the people and industry in their local service area, (2) their programs in terms of cost and impact, (3) other agencies providing similar programs, (4) effective program promotional methods, and (5) staff development requirements.

Reactions to the results of the survey of importance of various characteristics of vocational programs took several directions. They suggested that it is important for adult programs to be as concerned about students' satisfaction with their experience in vocational education programs as with employer satisfaction with the quality of a graduate's work -- there is no way to get away from the latter criteria for a vocational education program. The proportion of graduates who would take the program over again was felt to be an indicator of student satisfaction with the program. A simpler indicator might be the proportion of enrollees completing a program. There seemed to be a common consensus that it was very important for the adult director to have information about both the people and industries in their local communities. Concerning employer satisfaction, several points were made. First, several employers already do their own evaluation of employees who have attended adult programs; and second, many program enrolees are self-employed or homemakers--the indicator of "employer" satisfaction may be inappropriate for these programs. Third, it appeared useful to have a more systematic way to collect employer assessment information on adult program leavers when it is appropriate.

It was suggested that adult program directors might interpret the characteristic of proportion of graduates employed in a related occupation differently from post secondary directors. For adult programs, the concern is that a high proportion of the program enrollees be employed in a related occupation while for post secondary programs the concern is with the proportion of students who enter a related occupation after leaving the vocational program. Because adult programs are usually very specific, it was judged that it would not be difficult to identify occupation related to a particular program.

Concerning staffing and facilities, it was suggested that there are large variations between service areas in persons who could be drawn on as

potential teachers and in facilities available.

Adult directors seem to interpret "benefits beyond placement" to mean work related characteristics such as pay, promotion, or productivity and not benefits to other aspects of one's life. An issue in contrasting adult programs with other types of vocational programs or even among adult programs is the selection of a "common denominator" unit--for example number of students is not appropriate (because of large variation in length of programs) while hours of instruction may be more appropriate.

Relative to student satisfaction with the program as an indicator, it was noted that some adult program students are required to attend instruction (e.g., those in formal apprenticeship program)--this may affect their satisfaction ratings. One director noted that the single overriding question to determine the effectiveness of adult programs was, "Whether or not the course met the student's occupational needs?". If the information to supply the indicators described in the survey is to be gathered about adult programs, it was recommended that sampling or spot checks which gather more thorough information would be more effective and efficient than gathering information from about all students. Further, it was noted that the development and use of the potential indicators be related to the evaluation process used with adult vocational education programs.

Last, the adult directors were concerned about lack of agreement between themselves and other groups such as students and advisory committees about the importance of various program characteristics. They suggested that these other groups also be surveyed to identify their priorities. When this is done, the directors recommended use of a shorter form (maximum of one page), use language which could be understood by the general public and that a representative sample of programs be involved. With respect to length of questionnaire, they suggested using only top ranked items (e.g., top 20) or sample of items since the purpose is only to check agreement with administrator ratings.

Summary. The results of meeting with each sample of administrator subgroups was very insightful concerning the interpretation of study findings and suggestions for further development of a set of vocational education indicators. Looking across the problems and issues facing vocational education administrators in Minesota, one is impressed with the complexity

of decisions to be addressed -- from questions of philosophy to those of instructional hardware. The information needs to assist in dealing with these problems and issues is equally far ranging. The information needs suggested reinforce several points uncovered in the review of literature on social indicators. Some of the areas of reinforcement include: (1) the shear complexity of social processes, (2) the shortcomings of even the indicators judged as most important, (3) the difficulty of assuring validity in selecting the most important indicators, (4) the importance of a conceptual framework to selecting and serving as a basis to interpret and consider the relationship among potential indicators, (5) the criticality of knowing the purpose of a social process, such as vocational education, to the selection of important indicators (6) the hesitancy to finally settle on a small group of indicators as best and (7) the recogntion of the serious consequences of indicator selection to the future of the social process under study.

While the administrators, as a group, raised few serious questions with the characteristics of vocational education which were revealed as most important through the survey process, they suggested the need to continue to check for additional important characteristics and to confirm findings with several other groups such as students, parents, teachers, other education administrators, legislators, advisory committee members, and employers. They were firm in stating that the indicators emerging from this study should only be "put on trial" in terms of calculation, display and use rather than be "locked in" as the best indicators to use at this time in viewing vocational education in Minnesota.

## Summary

This chapter presented information about the findings of this study and about the quality of data on which the findings are based. The study findings were rather straightforwardly presented. A relatively small set of characteristics of vocational education emerged as potential vocational education indicators. There was a high degree of agreement among subgroups of vocational educators concerning the most important characteristics.

Investigation of the quality of the data serving as a basis for potential indicators identification implied that the data were: (1) consistent

over time, at least for the short run; (2) sensitive to difference in importance of characteristics; (3) consistent for the most important characteristics across selected external groups, and (4) confirmed (and extended) through dialogue with administrators. This evidence concerning the quality of the data suggest that it is credible for the purpose intended.

# CHAPTER V.

# DISCUSSION OF RESULTS

To repeat, the purpose of this study was to identify an initial set of the most important, general vocational education indicators in Minnesota. Using vocational education administrators at both the local school and state level, a potential group of indicators was identified. There was amazing consistency in the responses of the four subgroupings of administrators -- secondary, post secondary, adult, and state level. Checks on reliability of the data which were conducted as part of this study imply that the results are consistent over at least a short period of time. Also, for the most important factors, the perceptions of vocational education administrators are consistent with teacher educators and State Advisory Council members. Both of these checks are forms of testing the reliability of findings.

Checks on validity (i.e, what is measured is what was thought to be measured) resulting from the mini-conferences with samples of vocational administrators provided some evidence of the validity of the findings. Other indications of validity can be gleamed by comparing the findings of this study with previous studies and with what would have been anticipated given the previously constructed conceptual framework for thinking about planning vocational education (Copa, 1981). As a final consideration, the top characteristics are examined in terms of meeting the criteria for desirable vital statistics posed at the beginning of this report. The last section of this chapter will illustrate potential uses of vocational eduation indicators in planning, review and providing public information about vocational education in Minnesota.

## Comparison with Previous Study

The most closely related study to this study was published by the MRDC in 1976 and entitled, Factors, Priorities and Information Needs in Planning Vocational Education: Views of Selected Educational Planners in Minnesota. In the study, data was collected through an intensive two-day simulation experience involving the making of planning decisions in vocational education. Analysis of data resulted in eight major factors to be

considered in planning vocational education. The factors were satisfaction (of students), satisfactoriness (of students to society), efficiency (output per cost), alternative sources (of preparation for work), quality (of program), equal opportunity (in access and service), legal requirements (of state and federal laws, rules and regulations) and mutual satisfaction (of both student and society). In terms of importance, efficiency was concluded to be the highest priority with satisfactoriness and legal requirements second. The other factors were judged to be of about equal but lower importance for planning vocational education. Moderate agreement was found between the importance of these factors for persons working at the state and local levels of education.

Assigning the ten most important characteristics found in this study to the major factors used in the previous study results in the information shown in Table 15. As is evident, most of the selected characteristics fall into the satisfactoriness factor which was found to be of second priority in importance in the previous study. The top characteristics, as a group, therefore tend to reflect an emphasis on meeting the needs of society or more specifically of industry as opposed to concern for the needs of students. Although, it can be argued that because students obtain employment, and further that the employment is in an occupation related to their training program (and therefore presumably uses skills developed in the program), the program is also meeting implied student needs. The top characteristics also indirectly represent an emphasis on legal requirements since both "employer satisfaction with quality of graduate's work" and "number of graduates employed in occupations related to the program" are specifically cited as evaluative criteria for vocational education in the federal 1976 Vocational Education Amendments; the latter characteristics is also specifically cited for the same purpose in Minnesota State Board of Vocational Education policy for vocational education. The characteristic, "projected job openings in occupations related to the program" is mentioned as a planning criterion in the 1976 Amendments, another indirect emphasis on legal requirements. In order to be able to provide information about the characteristics calling for specification of job openings related to a particular program and number of graduates selecting occupations related to the program, it is logical to expect the high importance of the characteristic," occupations for which the program is designed to provide

Table 15

Assignment of Overall Top Ten Characteristics to

Major Factors Identified in Previous Study

| Characteristics | Overall rank | Related major factor |
|---|---|---|
| Employer satisfaction with quality of graduate's work | 1 | Satisfactoriness |
| Number of graduates employed in occupations related to program | 2 | Satisfactoriness |
| Projected job openings in occupations related to programs | 3 | Satisfactoriness |
| Number of graduates employed | 4 | Satisfactoriness |
| Occupations for which program is designed to provide training | 5 | Quality |
| Performance of enrollees in program | 6 | Quality |
| Availability of qualified staff and/or facilities and equipment | 7 | Efficiency |
| Satisfaction with present job | 8 | Satisfactoriness |
| Program cost | 9 | Efficiency |
| Employer's satisfaction with graduates' personal characteristics in relation to work | 10 | Satisfactoriness |

Note. Previous study is Copa, G. H., Geigle, E. K., and Imade, U. O. Factors, Priorities, and Information Needs in Planning Vocational Education: Views of Selected Educational Planners in Minnesota. Minneapolis, MN: University of Minnesota, Minnesota Research and Development Center for Vocational Education, March, 1976.

training." The low occurrence of characteristics which fit the major factor of efficiency, found to be of highest priority in the previous study, is thought to be the result of the detailed specification of characteristics in this study. Efficiency was defined as a ratio of outcome measures to cost. In this study there were several outcome characteristics of vocational education to be rated, some of which were judged to be of highest importance (i.e., number of graduates employed, employed full-time, employed in occupations related to program). Program cost was listed as another characteristic which fell in the top ten characteristics for three of the subgroups of administrators. But, none of the characteristics called for judgments of ratios of outcome measures to costs; therefore, it is reasonable to expect, by design, no characteristics directly fitting the efficiency factor used in the previous study. However, by extrapolation, since several outcome measures were judged important and program cost was judged important, the concern for efficiency is likely represented in the list of most important characteristics.

In summary, the characteristics identified as most important candidates for vital statistics about vocational education are consistent with the results of the most closely related previous study. Satisfactoriness in meeting societal needs, ranked as second priority in importance in the previous study is more directly reflected in the characteristics judged most important. The importance of legal requirements, also ranked second in priority in the previous study, is confirmed indirectly in this study by the specific characteristics selected to reflect satisfactoriness. Reaffirmation of the importance of efficiency, which was found to be the most important major factor in the previous study, can only be hypothesized from the findings of this study because of the way in which characteristics of vocational education were specified.

## Comparison with Conceptual Framework

Several years previous to this study a conceptual framework for thinking about planning vocational education was drafted, underwent several revisions and was finally published in 1981 (Copa). One aspect of the framework suggests that the factors important in planning vocational education can be categorized under headings of "could," "should" and "would."

These headings refer basically to the time frame being considered. The heading "could" refers to the long run in which nearly every important planning factor is variable -- only legal and moral factors are considered fixed and important to consideration. In the "should" context, the time frame is mid-length, perhaps 3-5 years, and the important factors are student needs, societal needs and the existence, accessibility, effectiveness, and cost of alternative sources of preparation for work. The "would" context refers to the very short run where availability of such factors as facilities, staff, curriculum, students, and jobs become important.

Using this aspect of the conceptual framework to help interpret the findings of this study, the ten overall most important characteristics found in this study were classified using the could, should, and would perspective; the results are shown in Table 16. As is evident, the highest ranking characteristics generally seem to fit the "should" or mid-range planning context while the lower ranking of the top ten characteristics fit the "would" or short range horizon. This classification implies that the very top characteristics are most useful for mid-range decision making concerning vocational education; that is, these characteristics are most useful in deciding what should be done as opposed to what could be or would be done in thinking about and managing vocational education in Minnesota.

## Meeting Criteria for Vital Statistics

At the beginning of this paper, five desirable features for social indicators were posed and briefly discussed. The features were that the indicators or measures selected for vital statistics should: (1) reflect major ends and/or means, (2) serve as good proxy measures for several other measures, (3) be easily understood, (4) be generally accepted as valid and reliable, and (5) be feasibly calculated in terms of time, cost and expertise available. Applying these features to the overall ten most important characteristics of vocational education for administrators results in the following observations.

In terms of reflecting major ends and means, all four major categories of characteristics (i.e., about enrollees, about program, about program

Table 16

Assignment of Overall Top Ten Characteristics to Context Defined by Proposed Conceptual Framework for Planning Vocational Education

| Characteristics | Overall rank | Assigned context |
|---|---|---|
| Employer satisfaction with quality of graduate's work | 1 | Should |
| Number of graduates employed in occupations related to program | 2 | Should |
| Projected job openings in occupations related to program | 3 | Should |
| Number of graduates employed | 4 | Would |
| Occupations for which program is designed to provide training | 5 | Could |
| Performance of enrollees in program | 6 | Should |
| Availability of qualified staff and/or facilities and equipment | 7 | Would |
| Satisfaction with present job | 8 | Should |
| Program cost | 9 | Would |
| Employer's satisfaction with graduates' personal characteristics in relation to work | 10 | Should |

Note. Conceptual framework is as proposed in Copa, G. H. Towards a Strategy for Planning Vocational Education, 1981.

leavers and about need for program) are represented by the characteristics. However, the characteristics concerning program leavers, tend to reflect more concern for the satisfactoriness of leavers to employers than the satisfaction of leavers with either employment or aspects of the program they left. It was surprising that some of the measures concerning enrollees sex, ethnic background and income level were not judged of high overall importance in view of current legislative concerns.

Concerning serving as a proxy for several other measures, the top characteristics meet this feature. For example, the characteristic, employer satisfaction with quality of graduate's work has several underlying dimensions. It can serve as a proxy for whether the right skills were taught, whether they were learned at the right level of performance, and overall work productivity and worker attitude which are more difficult and numerous to measure.

A related concern in developing potential indicators for vocational education is that the indicators be relatively independent of each other -- that is, they measure different aspects of vocational education. Some evidence of independence is indicated by the correlation in importance ratings among the ten most important indicators as shown in Table 17. Most of the correlations are in the range of .1-.3; only eight of the 45 intercorrelations are greater than .4.

From results of the mini-conferences with vocational education administrators, it appears that the top characteristics are understood and reasonably accepted as being important. They represent a place to start toward developing a set of vocational education indicators in Minnesota. In dialogue, the vocational education administrators urged continued investigation of the degree of consensus on the importance of the top characteristics and search for additional characteristics which might serve as potential indicators.

The desired feature concerning ease of calculation is difficult to judge. What is needed is to test the actual derivation of measures of the top characteristics in local schools and at the state level. Again, from preliminary results of the mini-conferences and the authors' experience in providing some of these kinds of information, their calculation is possible and in some cases the information is already available through existing systems such as the student and employer follow-up system.

Table 17

Correlation Between Ratings of Most Important Characteristics

by Vocational Education Administrators

| Most Important Characteristics → / ↓ | Employers satisfaction with quality of graduate's work | Number of graduates employed in occupations related to program | Projected job openings in occupations related to program | Number of graduates employed | Occupations for which program is designed to provide training | Performance of enrollee in program | Availability of qualified staff and/or facilities and equipment | Satisfaction with present job | Program cost | Employers satisfaction with graduates' personal characteristics in relation to work |
|---|---|---|---|---|---|---|---|---|---|---|
| Employer satisfaction with quality of graduates work | | | | | | | | | | |
| Number of graduates employed in occupation related to program | .41 | | | | | | | | | |
| Projected job openings in occupations related to program | .27 | .42 | | | | | | | | |
| Number of graduates employed | .26 | .44 | .22 | | | | | | | |
| Occupations for which program is designed to provide training | .30 | .42 | .26 | .36 | | | | | | |
| Performance of enrollee in program | .26 | .17 | .20 | .28 | .45 | | | | | |
| Availability of qualified staff and/or facilities and equipment | .13 | .09 | .05 | .25 | .37 | .51 | | | | |
| Satisfaction with present job | .49 | .29 | .25 | .32 | .23 | .11 | .07 | | | |
| Program cost | .24 | .18 | .17 | .37 | .34 | .32 | .37 | .15 | | |
| Employers satisfaction with graduates' personal characteristics in relation to work | .46 | .16 | .12 | .28 | .15 | .27 | .13 | .36 | .10 | |

## Uses of Vocational Education Indicators

As noted early in this report, the three uses contemplated for vocational education indicators was in reviewing, planning, and providing public information about vocational education. Use of the most important characteristics identified in this study as potential indicators will be illustrated for each of these purposes.

For reviewing vocational education, the indicators could each be thought of as a "thermometer" for vocational education. The thermometer would appear as shown in Figure 1. Thermometers could be developed for each program within a school, for each school averaging across programs, for all programs at the same type across the state or for all programs in the state at a particular level (i.e., secondary, post secondary, adult). With these thermometers, comparisons could be made between programs and between schools or, with data from several years, between years for the same program. Given experience with the indicators, upper and lower "acceptable" ranges on the value of the indicator could be developed. With these ranges in place, programs could be placed under detailed review when indicators fall outside the acceptable range. The detailed review

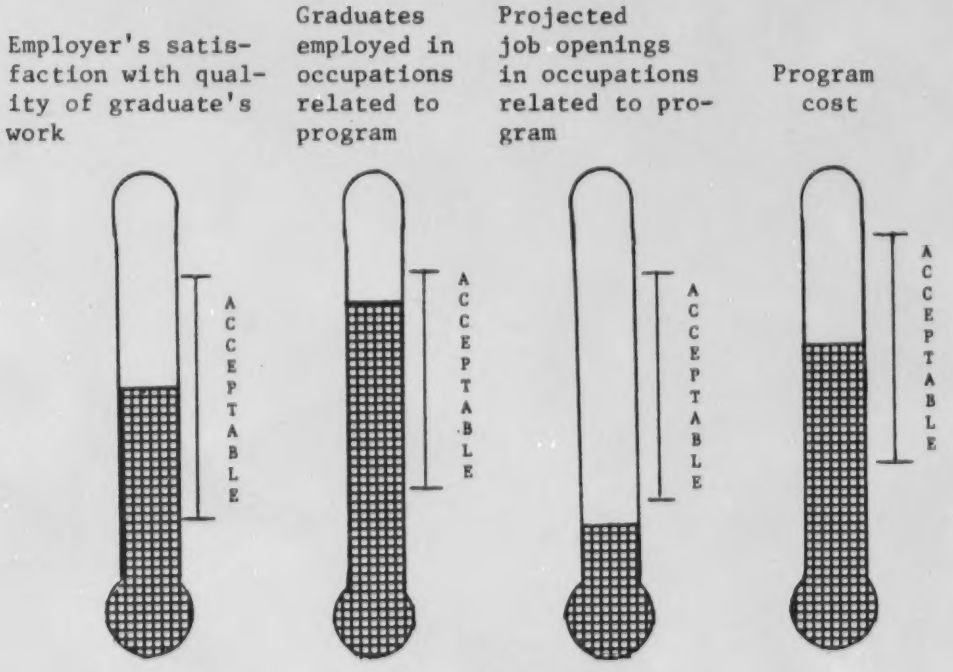


Figure 1. Using vocational education indicators to review vocational education.

could encompass the cluster of less important statistics which related to the particular indicator being used.

In planning vocational education, data on several years for a vocational education program could be put into a format as shown in Table 18. After reflecting on the past trend for the program and considering the present and future context for the program, goals could be set for each of the indicators. For example, given the data shown in Table 18, a goal of 80 percent of employers rating graduate's work as better than average for other workers in a similar position might be set. This goal, in turn, would provide direction to program improvement activities and would serve as a basis for budget request.

Table 18

Using Vocational Education Indicators to

Plan Vocational Education

| Indicator | Year | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 (Present) | 1983 (Goal) |
| Percent of employers satisfied with quality of graduate's work | 55% | 65% | 65% | 68% | 70% | 75% | ____ |
| Percent of graduates employed in occupations related to program | 80% | 70% | 72% | 75% | 80% | 82% | ____ |
| • | | | | | | | |
| • | | | | | | | |
| • | | | | | | | |
| Program cost (per graduate) | $2500 | $2800 | $3000 | $3400 | $5200 | $3100 | ____ |

For providing public information, information about indicators could be put in graphic form as is often used for economic indicators. These graphs (as shown in Figure 2) with narrative interpretation could be presented to governing bodies and/or disseminated through public media such as the newspapers. In this way, the "health" of vocational education could be communicated as a basis for change in policy and/or resource requests.

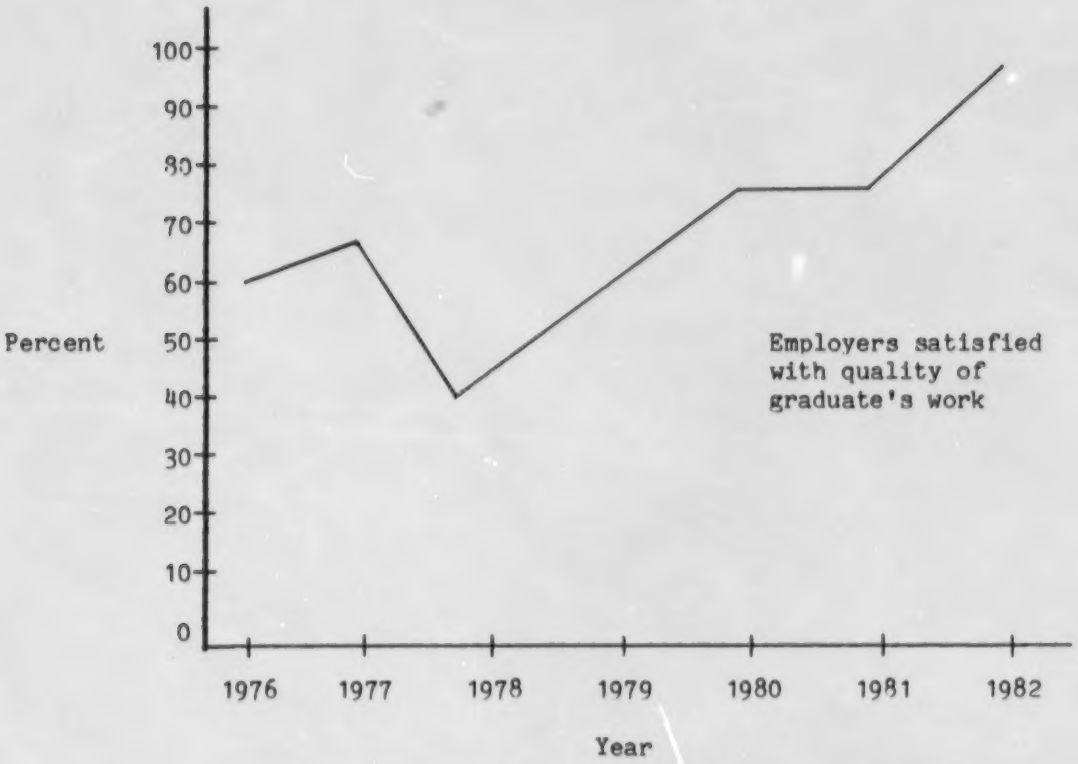


Figure 2. Using vocational education indicators for providing public information about vocational education.

The above illustration of uses are only a few of many possibilities which could be developed. Experience with their use would help guide refinement and additions.

# CHAPTER VI.

# CONCLUSIONS AND RECOMMENDATIONS

The findings of this study in the context of previous experience with social indicators allow the following conclusions and recommendations:

- Potential vocational education indicators.

  There is a rather small number of characteristics of vocational education on which there is substantial current agreement among vocational education administrator of importance for planning, reviewing, and providing public information about secondary, post secondary and adult programs in Minnesotsa. These potential indicators are:

  - Employer satisfaction with quality of graduate's work
  - Number of graduates employed in occupation related to program
  - Projected job openings in occupatons related to program
  - Number of graduates employed
  - Occupations for which program is designed to provide training
  - Performance of enrollee in program.
  - Program cost

  These are characteristics of vocational education which were among the top ten in importance by at least three of the four subgroups of administrators.

- Further justification of potential indicators.

  Other groups, particularly clients of vocational education and those providing resources for its operation should be queried to confirm vocational education administrator's judgments of the important characteristics of vocational education. Special care should be taken to insure that these groups understand what is being asked and the consequences of their responses. Further, efforts should be made to develop a mission statement and conceptual framework for viewing vocational education in Minnesota as a means to provide direction in indicator selection and subsequent interpretation.

- Pilot testing of potential indicators.

  The potential vocational education indicators listed above should be moved to a "pilot testing" stage as a means to their development as

"full fledge" indicators. Pilot testing should be done at both the local and state education level. During testing, particular attention should be paid to: (1) Developing a format which best displays and allow clear interpretation of the indicator, (2) feasibility of deriving the indicator in terms of available data, time, cost, and expertise required, and (3) uses of the indicator in planning, review and providing public information.

As was suggested in the summary of related literature, the development of vocational education indicators which can be used with confidence is likely to be a lengthy process. While this study has provided a place to start in the process, caution is suggested in hoping for large immediate benefits and restraint is urged in the bold use of the identified potential indicators. Rather, the development of indicators should be thought of as an evolutionary process with opportunity for modification and learning appropriate uses through both thought and practice.

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# APPENDIX I.
# QUESTIONNAIRE

Minnesota Research Coordinating Unit
for Vocational Education
Department of Vocational and Technical Education
University of Minnesota
Minneapolis, Minnesota 55455

# CHARACTERISTICS FOR REVIEW, PLANNING AND PUBLIC INFORMATION ABOUT VOCATIONAL EDUCATION

| CHARACTERISTIC | IMPORTANCE OF CHARACTERISTIC | | | | | | |
|---|---|---|---|---|---|---|---|
| | Not Necessary | | | | | | Essential |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **CHARACTERISTICS OF ENROLLEES IN PROGRAM** | | | | | | | |
| 1. Sex of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Age of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. Number of handicapped enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Number of disadvantaged enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Ethnic origin of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Marital status of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. Military status of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Education level of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Previous vocational training of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Occupational experience of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Income level of enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Financial assistance available to enrollees | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Occupation of enrollee's parents/guardians | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. Education level of enrollee's parents/guardians | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. Income level of enrollee's parents/guardians | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. Size of family from which enrollees came | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. Geographic location of enrollee's home residence | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. Aptitude level of enrollee | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. Achievement level of enrollee | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. Attendance of enrollee during program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. Performance of enrollee in program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. Portion of program completed by enrollee | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| CHARACTERISTIC | IMPORTANCE OF CHARACTERISTIC | | | | | | |
|---|---|---|---|---|---|---|---|
| | Not Necessary | | | | | | Essential |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **CHARACTERISTICS OF PROGRAM** | | | | | | | |
| 23. Occupation(s) for which program is designed to provide training | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. Purposes of program other than training for job entry | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. Number of applicants | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. Number of enrollees (total) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. Number of enrollees from other states | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. Capacity of program (enrollees) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. Number of program graduates | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. Number of enrollees completing their objectives (but not graduating) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31. Number of enrollees who withdraw before completion | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32. Reasons for enrollee withdrawal | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. Program cost | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. Program benefits beyond placement | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. Occupations selected by program graduates | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36. Availability of qualified staff and/or facilities and equipment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37. Number and location of similar programs | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 38. Availability of student support services (e.g., guidance, remediation, placement) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39. Articulation with other programs (i.e., students able to transfer work to another program or institution) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 40. Student time required to complete program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **CHARACTERISTICS OF PROGRAM LEAVERS** | | | | | | | |
| 41. Number of graduates employed | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 42. Number of graduates employed in occupation related to program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 43. Number of unemployed (looking for work) graduates | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 44. Number of graduates employed full-time | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 45. Number of graduates unavailable for employment (e.g., home-making, military) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 46. Time between graduation and first job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 47. Salary of graduates | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 48. Rate of advancement of graduates | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 49. Number of graduates enrolled in further education | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | CHARACTERISTIC | IMPORTANCE OF CHARACTERISTIC | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Not Necessary | | | | | | Essential |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 50. | Number of graduates enrolled in related programs in further education | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 51. | Satisfaction with present job | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 52. | Satisfaction with job opportunities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 53. | Satisfaction with curriculum | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 54. | Satisfaction with teachers | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 55. | Satisfaction with program facilities and equipment | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 56. | Satisfaction with placement services | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 57. | Satisfaction with counseling services | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 58. | Number of graduates who would enroll in program again | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 59. | Satisfaction with recreation facilities | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 60. | Employer satisfaction with quality of graduate's work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 61. | Employer satisfaction with graduate's personal characteristics in relation to work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 62. | Number of graduates employed out of state | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | **CHARACTERISTICS ABOUT NEED FOR PROGRAM** | | | | | | | |
| 63. | Projected total employment in occupations related to program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 64. | Projected job openings in occupations related to program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 65. | Number of persons wanting training in occupations related to program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 66. | Community attitudes towards program | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 67. | Existence of other sources of training (e.g., on-job, private schools) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 68. | Accessibility of other sources of training (e.g., distance, cost, entrance requirements, size) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 69. | Effectiveness of other sources of training (e.g., number of graduates, placement rates) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 70. | Cost of other sources of training | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | **OTHER CHARACTERISTICS** | | | | | | | |
| 71. | _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 72. | _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 73. | _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| CHARACTERISTIC | IMPORTANCE OF CHARACTERISTIC | | | | | | |
|---|---|---|---|---|---|---|---|
| | Not Necessary | | | | | | Essential |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 74. _____ | | | | | | | |
| _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 75. _____ | | | | | | | |
| _____ | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**IMPORTANT**

List below the number of the five (5) characteristics you consider most important for review, planning, and public information about vocational education in Minnesota:

_____ _____ _____ _____ _____

What is your complete job title?

_____

I have been associated with vocational education for _____ years.

## APPENDIX II.
## QUESTIONNAIRE COVER LETTER

College of Education

UNIVERSITY OF MINNESOTA
TWIN CITIES

Minnesota Research and Development Center
Department of Vocational and Technical Education
R460 Vocational and Technical Education Building
1954 Buford Avenue
St. Paul, Minnesota 55108

COVER LETTER

Dear Vocational Education Administrator:

We need your advice! The Minnesota Research and Development Center for Vocational Education has been asked by the Division of Vocational-Technical Education, Minnesota State Department of Education, to identify the most important characteristics of vocational education programs. The list of characteristics is to be used to describe each vocational education program for review, planning and public information. In order to make the description effective, it must be relatively short (i.e., a maximum of 10-15 characteristics can be used).

We would like your advice on which characteristics you think should be used. To help in your selection, we have made a list of possible characteristics to choose from. You may add other characteristics if the ones you consider important are missing from our list.

After reviewing the list to see if the characteristics you consider important are included, or if not, you have added them, rate each characteristics in terms of importance for review, planning and public information about vocational education programs. Use the rating scale provided in which importance can vary from "1" being "not necessary" to "7" being "essential."

After you have completed the rating of each characteristic, rank the 15 most important factors in the column labeled "Rank." Use a one (1) for the most important characteristic.

Thank you for your help in this effort--it will help make us sensitive to your concerns in putting together a final list.

Please return the questionnaire in the self-addressed, stamped envelope in the next week. Your name was drawn as part of a random sample of vocational educators; therefore, your response is important in giving us a complete picture from the professionals you represent. If you have any questions, call George Copa at (612) 373-3838.

Sincerely,

George H. Copa
Director

js

# APPENDIX III.

# MEAN RATINGS OF CHARACTERISTICS BY EACH SUBGROUP OF VOCATIONAL EDUCATION ADMINISTRATORS

Table 19

Mean Ratings of Importance of Characteristics of Vocational Education

by Vocational Education Administrators

| Characteristics | State department staff | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| CHARACTERISTICS OF ENROLLEES IN PROGRAM | | | | |
| Sex of enrollees | 4.0 | 3.6 | 2.8 | 3.3 |
| Age of enrollees | 3.9 | 4.1 | 3.0 | 3.7 |
| Number of handicapped enrollees | 4.5 | 4.5 | 2.4 | 3.5 |
| Number of disadvantaged enrollees | 4.4 | 4.0 | 2.9 | 3.3 |
| Ethnic origin of enrollees | 3.0 | 2.4 | 1.9 | 2.5 |
| Marital status of enrollees | 2.3 | 2.0 | 1.7 | 2.0 |
| Military status of enrollees | 1.9 | 1.8 | 1.6 | 1.9 |
| Education level of enrollees | 4.3 | 4.5 | 3.6 | 3.7 |
| Previous vocational training of enrollees | 4.4 | 4.4 | 3.8 | 3.9 |
| Occupation experience of enrollees | 4.5 | 4.6 | 3.9 | 4.5 |
| Income level of enrollees | 2.9 | 2.7 | 2.7 | 2.3 |

Scale of importance is 1 to 7 with "1" being "not necessary" and "7" being "essential."

Table 19 (Continued)

| Characteristics | State department staff | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Financial assistance available to enrollees | 4.6 | 4.0 | 4.2 | 4.9 |
| Occupation of enrollee's parents/guardians | 2.2 | 2.2 | 1.9 | 1.5 |
| Education level of enrollee's parents/guardians | 2.0 | 2.2 | 1.7 | 1.6 |
| Income level of enrollee's parents/guardians | 2.2 | 2.2 | 2.2 | 2.2 |
| Size of family from which enrollees came | 1.7 | 1.8 | 1.6 | 1.7 |
| Geographic location of enrollee's home residence | 3.0 | 3.1 | 2.5 | 3.6 |
| Aptitude level of enrollee | 4.7 | 4.6 | 4.6 | 4.5 |
| Achievement level of enrollee | 4.7 | 4.8 | 4.5 | 5.0 |
| Attendance of enrollee during program | 5.2 | 5.9 | 5.7 | 5.7 |
| Performance of enrollee in program | 6.1 | 6.3 | 6.1 | 6.4 |
| Portion of program completed by enrollee | 5.8 | 5.9 | 5.8 | 5.3 |
| Occupation(s) for which program is designed to provide training | 6.2 | 6.3 | 6.2 | 6.5 |
| Purposes of program other than training for job entry | 4.6 | 5.5 | 4.4 | 5.1 |

Table 19 (Continued)

| Characteristics | State department staff | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Number of applicants | 4.2 | 4.4 | 3.6 | 4.7 |
| Number of enrollees (total) | 4.6 | 4.7 | 4.6 | 4.8 |
| Number of enrollees from other states | 3.0 | 2.6 | 2.6 | 3.1 |
| Capacity of program (enrollees) | 4.8 | 5.2 | 4.7 | 5.6 |
| Number of program graduates | 6.1 | 5.6 | 5.6 | 5.8 |
| Number of enrollees completing their objectives (but not graduating) | 5.4 | 5.2 | 5.2 | 5.7 |
| Number of enrollees who withdraw before completion | 5.2 | 5.0 | 4.6 | 5.2 |
| Reasons for enrollee withdrawal | 5.6 | 5.3 | 4.9 | 5.8 |
| Program cost | 5.6 | 5.9 | 5.8 | 5.7 |
| Program benefits beyond placement | 5.0 | 5.5 | 4.9 | 5.9 |
| Occupations selected by program graduates | 5.9 | 5.8 | 5.7 | 5.7 |
| Availability of qualified staff and/or facilities and equipment | 6.0 | 5.6 | 5.8 | 6.2 |
| Number and location of similar programs | 5.1 | 4.9 | 5.3 | 5.1 |

Table 19 (Continued)

| Characteristics | State department staff | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Availability of student support services (e.g., guidance, remediation, placement | 5.5 | 5.4 | 5.3 | 5.6 |
| Articulation with other programs (i.,e., students able to transfer work to another program or institution | 5.3 | 5.8 | 4.8 | 5.9 |
| Student time required to complete program | 5.2 | 5.4 | 5.5 | 5.5 |
| Number of graduates employed | 6.0 | 6.1 | 5.9 | 5.9 |
| Number of graduates employed in occupation related to program | 6.4 | 6.1 | 6.1 | 6.2 |
| Number of unemployed (looking for work) graduates | 5.9 | 5.0 | 5.7 | 5.9 |
| Number of graduates employed full-time | 6.1 | 5.9 | 5.7 | 5.8 |
| Number of graduates unavailable for employment (e.g., homemaking, military) | 5.3 | 5.2 | 5.0 | 5.0 |
| Time between graduation and first job | 5.0 | 4.7 | 4.1 | 5.0 |
| Salary of graduates | 5.6 | 5.5 | 5.4 | 5.8 |
| Rate of advancement of graduates | 5.8 | 5.3 | 4.9 | 5.7 |

Table 19 (Continued)

| Characteristics | State department staff | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Number of graduates enrolled in further education | 4.8 | 5.3 | 4.3 | 1.2 |
| Number of graduates enrolled in related programs in further education | 4.7 | 5.4 | 4.0 | 1.1 |
| Satisfaction with present job | 5.8 | 5.5 | 5.2 | 1.1 |
| Satisfaction with job opportunities | 5.6 | 5.6 | 5.3 | 1.0 |
| Satisfaction with curriculum | 6.0 | 5.8 | 5.6 | 1.3 |
| Satisfaction with teachers | 5.8 | 5.3 | 5.7 | 1.4 |
| Satisfaction with program facilities and equipment | 5.6 | 5.5 | 5.7 | 1.1 |
| Satisfaction with placement services | 5.6 | 5.4 | 5.4 | 1.0 |
| Satisfaction with counseling services | 5.3 | 5.2 | 5.2 | 1.2 |
| Number of graduates who would enroll in program again | 5.8 | 5.5 | 5.2 | 1.2 |
| Satisfaction with recreation facilities | 2.9 | 2.5 | 3.2 | 1.7 |
| Employer satisfaction with quality of graduates work | 6.6 | 6.4 | 6.4 | .6 |

Table 19 (Continued)

| Characteristics | State department staff | Secondary | Post secondary | Adult |
|---|---|---|---|---|
| Employer satisfaction with graduate's personal characteristics in relation to work | 5.9 | 5.7 | 5.7 | 1.6 |
| Number of graduates employed out of state | 3.8 | 3.4 | 3.3 | 1.8 |
| Projected total employment in occupations related to program | 5.9 | 6.0 | 5.9 | .7 |
| Projected job openings in occupations related to program | 6.2 | 6.2 | 6.3 | .7 |
| Number of persons wanting training in occupations related to program | 5.7 | 5.8 | 5.6 | 1.1 |
| Community attitudes towards program | 4.9 | 5.2 | 4.5 | 1.3 |
| Existence of other sources of training (e.g., on-the-job, private schools) | 5.1 | 5.2 | 5.2 | 1.0 |
| Accessibility of other sources of training (e.g., distance, cost, entrance requirements, size) | 5.0 | 5.0 | 5.1 | 1.2 |
| Effectiveness of other sources of training (e.g., number of graduates, placement rates) | 5.2 | 5.2 | 5.3 | 1.3 |
| Cost of other sources of training | 5.1 | 5.1 | 5.1 | 1.5 |

# APPENDIX IV.

# CONFERENCE QUESTIONNAIRE, AGENDA, AND PARTICIPANTS

PRE-MEETING QUESTIONNAIRE

Name: _____

Address: _____

_____

1. What are the five or six most pressing problems, issues or decisions that you face during the next two years in managing vocational education programs for which you have responsibility?

2. What are the "key" pieces of information which would assist in dealing with these problems, issues or decisions? You can list the pieces of information separately for each problem, issue or decision or simply make one list.

AGENDA

CONFERENCE ON "VITAL STATISTICS" ABOUT VOCATIONAL

EDUCATION IN MINNESOTA

Earl Brown Continuing Learning Center
University of Minnesota

| | |
|---|---|
| 9:00 - 9:15 | Coffee and Rolls |
| 9:15 - 10:15 | Introduction<br>Discussion of Issues<br>and Information Needs |
| 10:15 - 11:00 | Results of Survey |
| 11:00 - 12:00 | Future Directions |

Lunch Following

CONFERENCE PARTICIPANTS

State Department of Education

Hal Birkland
Ron Dreyer
Sharon Grossbach
Robert Babcock
Charles Shubat
Arthur Vadnais

Secondary Vocational Education Directors

| | |
|---|---|
| Ron Anderson | Cambridge |
| Don Frederick | Wells |
| Carl Montzka | Blue Earth |
| Linden Terwilliger | Stillwater |
| Vern Vick | Roseville |

Post Secondary Area Vocational-Technical Institute Directors

| | |
|---|---|
| Fred Ballou (for Arnt Aune) | Thief River Falls |
| Wayne Broecker | Albert Lea |
| Edward Dunn | Red Wing |
| Erwin Geigle | Pine City |
| Vernon Mack | Alexandria |
| Bill Mamel | Suburban Hennepin |
| Charles Nichols | Minneapolis |
| Marvin Thomsen | Pipestone |

Adult Vocational Education Directors

| | |
|---|---|
| James Baymler | Wadena |
| Gunder Hansen | Detroit Lakes |
| Tom Jessen | St. Paul |
| Lowell Johnson | Austin |
| Roger Iverson | Willmar |
| Rodger Palmer | Duluth |
| Bill Weiser | Rochester |

# APPENDIX V.

# CONFERENCE RESULTS: PROBLEMS, ISSUES AND INFORMATION NEEDS

Table 20

Problems, Issues and Information Needs of Selected

State Department of Education Staff

| Problems and Issues |
|---|
| • Financing vocational education. |
| • Federal legislation on vocational education and CETA -- how to merge services. |
| • Defining information requirements of managers. |
| • Administration of post secondary and adult programs -- how they relate to one another. |
| • Development of software to go along with electronic communication and computing -- hardware for management and instruction. |
| • More and better quality information about follow-up of students -- secondary, post secondary and adult. |
| • Declining enrollments and upgrading of people already employed (in the labor market). |
| • Development of marketing concept for vocational education as a way to be more responsive to prospective students and industries. |
| • Ability of advisory committees to deliver good information and the use of this information by schools. |
| • Resources in terms of enough qualified people to do and manage vocational education. |
| • Equal opportunity for special groups. |
| • Responsiveness to changes in energy availability and technology. |
| • Organizational structure and coordination in state department of education. |
| • Lack of change in management and organizational stucture in the whole system of vocational education in state -- particularly post secondary vocational education. |
| • Lack of knowledge of or skill in present administrative policy/procedures related to vocational education. |

Table 20 (Continued)

| Problems and Issues |
|---|
| • Governance of vocational education. |
| • Degree granting at post secondary level -- what standard is to be maintained. |
| • Teacher upgrading -- technical skills, apathy, motivation. |
| • Better administrative internal coordination in Division of Vocational-Technical Education and balance of Department of Education. |
| • Managers not understanding management information systems. |
| • Knowledge of and input to external studies of vocational education. |

| Information Needs |
|---|
| • How to impact on the legislative process -- what are rights to testify, when will issues be heard, knowledge of legislative process and channels to be used, what are my duties. |
| • Knowing goals of vocational education. |
| • Who are key decision makers in vocational education. |
| • Position of state board for vocational education on policy matters affecting vocational education. |
| • Credible data on program cost by various sub-items (e.g., instruction, capital), return on training investment (e.g., income, productivity), trends, number of students served and number of programs. |
| • Plans of other agencies affecting vocational education. |
| • Access to data (reports) of others in the business of training for occupations. |
| • Knowing to what extent the programs, priorities, and planning/budgeting cycle are consistent between levels of vocational education (e.g., state and local) and between agencies relating to vocational education (e.g., CETA, vocational rehabilitation). |

Table 20 (Continued)

| Information Needs |
| --- |
| • Are the people who are being trained going to get jobs. |
| • What information managers need to make decisions. |
| • Procedures/policies and careers trained for at post secondary as compared to adult levels -- clarification of mission and definitions. |
| • How will declining enrollments impact on vocational education. |
| • Impact of economic recession on enrollments in vocational education. |
| • Developers of instructional software for computers and video equipment, appropriate uses, how technology will change. |
| • Quality of follow-up data, coverage, size/quality of sample. |
| • What kind of product would fit needs of each potential student of vocational education -- what are target markets for vocational education (e.g., beyond high school graduates for post secondary programs) -- how to reach these markets. |
| • Knowledge of areas in which program is legal and appropriate for special needs groups. |
| • How big (i.e., encompassing) is vocational education -- what aspects of service does it provide. |
| • Better records of what happens in advisory committee meetings -- the impact of these meetings -- why was advice not followed. |
| • Who is not now being served by vocational education. |
| • What new and emerging jobs are coming up in business and industry -- is vocational education contributing to attracting new industry to the state -- information about declining jobs. |
| • Regular information about other agencies affecting vocational education at critical time (e.g., budgeting). |

Table 21

Problems, Issues and Information Needs of Selected

Secondary Vocational Education Administrators

| Problems and Issues |
|---|
| • Declining enrollments and its impact on reduction in financing and students available to enroll in program. |
| • Awareness of parents, students and teachers about benefits from vocational education programs. |
| • Recruiting and keeping qualified instructors. |
| • Availability of suitable facilities. |
| • How to prepare for "wedding" of vocational education and general education. |
| • Selling vocational education to school boards with no categorical aid. |
| • Staff reductions resulting in lost opportunities for students. |
| • Keeping programs up-to-date with changing technology. |
| • Upper administrative (principal, superintendent, board) support for vocational education -- not "lip service." |
| • Program assessment to improve curriculum. |
| • Dealing effectively with imbalance in enrollment for different sexes in vocational education classes. |
| • Maintaining some local control of vocational education -- even with state and federal mandates. |
| • Involving private sector and CETA prime sponsors in accepting some responsibility for education for work of young people. |
| • Consistent program management and administration of secondary vocational education in the state. |

Table 21 (Continued)

| Information Needs |
| --- |
| • Condensation of presently available information (i.e., a few pages, graphs). |
| • Pattern of decline in population -- by geographic area. |
| • Census data that coincides with school district boundaries. |
| • Sources of alternative funding. |
| • Careers which are in demand -- short, readible format. |
| • New research findings about vocational education -- bibliography on monthly or semi-annual basis. |
| • Occupations available to supplement teacher incomes. |
| • Alternative employment possibilities for teachers who are released (e.g., What occupations did other former teachers enter? Is there a demand for these occupations? What can schools do to help the transition?). |
| • Communication network with general education staff and administration. |
| • Students and parents response (interest in) to program -- use representative group of parents. |
| • What would happen to students if they had not taken vocational education. |
| • Clear picture (definition) of purpose/mission of secondary vocational education. |
| • Effects of economic hardship (e.g., students needing to work part-time) on participation in vocational education. |
| • Low enrollment classes in each geographic area. |

Table 22

Problems, Issues and Information Needs of Selected

Area Vocational-Technical Institute Directors

| Problems and Issues |
|---|
| • Time to exploit what we already know about educating students. |
| • Staff development activities for our vocational institute staff and state department staff. |
| • Declining enrollment and its effect on schools and employers. |
| • Role of vocational education in other than job placement. |
| • Adequate funding. |
| • Efficient and coordinated marketing of vocational education for purposes of staffing, student recruitment and minority group participation. |
| • Effects of economy on vocational education. |
| • Determining what skills industries need to have for their employees. |
| • Better data processing services at the local level for providing management information. |
| • Negotiation of master contracts with teachers in local districts. |
| • Building and capital improvement to meet changing needs. |
| • Incidence of low enrollment classes in different geographic areas. |
| • Overall state planning in relation to local planning. |
| • Stereotyping vocational education (e.g., as being for only those who are disadvantaged, sex stereotyping of certain programs). |
| • Curriculum updating. |
| • Resource development from non-traditional sources. |
| • Program mix which is appropriate for both service and goods producing industries. |
| • Support of business and industry for vocational education. |

Table 22 (Continued)

| Problems and Issues |
|---|
| • Dealing with special populations (e.g., displaced homemaker, minority groups) -- without stereotyping vocational education. |
| • Communicating information to AVTI's about the effectiveness of new instructional technology (e.g., use of computers). |
| • Program approval process. |
| • Re-examination of licensure criteria for staff. |
| • Adversary relationship between post-secondary educational systems in the state (e.g., AVTI's and community colleges). |
| • Who are AVTI's most responsive too -- students, state, state industries? |

| Information Needs |
|---|
| • Geographic service area information (e.g., types of industries, instruction-related services required in each industry). |
| • Each AVTI now plans for own area, need information for long range planning about what is now being done and what is not covered by the system at present so can expand without harming others. |
| • Needs of special populations directly from members of these populations. |
| • Common base of information among educational systems in the state. |
| • What would it cost not to have vocational education in the state. |
| • What is the extent of industry support for vocational education. |
| • Attitude of the public toward vocational education. |
| • Political implications of how information is communicated and how these implications should be handled. |
| • How to interpret information which is shared in a way that it can be accurately understood. |

Table 22 (Continued)

| Information Needs |
|---|
| • Comparable information on others who are in the business of education, particularly vocational education. |
| • Needs of people over their whole life time for vocational education. |
| • Goals of different institutions in relation to community needs (a mission statement). |
| • What do communities need -- the people and industry. |
| • How to use information about people and industry needs. |
| • How various educational institutions can perform complementary roles in serving the needs of people and industry. |
| • Effectiveness of all delivery systems for vocational education in the past. |
| • What would be the consequences to industry of dropping some of successful vocational education programs. |
| • Demographic information (e.g., number of people, dropouts rates). |
| • Educational needs of older groups. |
| • How AVTI's are being constrained by other agencies (e.g., as with staff licensure rules). |
| • Nation-wide information about employment and demographic trends. |
| • Needs of people versus employment needs -- especially where conflict occurs -- better lead information on the future. |

Table 23

Problems, Issues and Information Needs of Selected

Adult Vocational Education Administrators

| Problems and Issues |
|---|
| • Addressing issues in delivering competency based adult instruction. |
| • Staffing -- recruitment and selecting skilled teachers. |
| • Obtaining coordinating time for developing curriculum, determining needs and setting up advisory committees. |
| • Native American education and migrant education. |
| • Space assignment for programs. |
| • Funding basis for meeting expanding student numbers, particularly for support services other than instruction. |
| • Problems in funding vocational education because of limitations in state plan -- lack of flexibility, certification of teachers, large amount of paperwork, pay rates for teachers, provision of secretarial support. |
| • Serving entire geographic area, particularly outer areas. |
| • How to monitor satellite programs within geographic area served. |
| • Commitment by local school district that they should be offering adult vocational education -- by board and administration -- many have only K-12 philosophy about purpose of local school. |
| • Parallel services from other schools, extension service, community programs doing similar activities -- there is need for definition of roles to prevent duplication. |
| • State department staff who are not aware of what is going on in field -- yet advising. |
| • Salary structure for instructors which is set up for K-12 staff. |
| • Maintaining flexibility -- local control over adult programs as a means of being responsive. |

Table 23 (Continued)

| Problems and Issues |
|---|
| • Very visible -- subject to undue inspection. |
| • Retaining the ability to serve small groups of students. |
| • How to effect legislation -- more directly. |
| • Promotion of programs. |
| • Network for keeping track of program offerings in the state and for sharing curriculum ideas among programs. |
| • Access to statistical data and services relevant to adult programs. |
| • Guidelines for administrative organization and operation of an adult vocational education program office. |

| Information Needs |
|---|
| • How much time and effort will it take to do staff development necessary to make curriculum competency based -- what are the dimensions of the problem (as for example from the experience at the post secondary level). |
| • Is a local service area being served adequately. |
| • Number of people attending programs in a service area from different parts of that area. |
| • Very localized data about the industries, programs requested in the past, training concerns of managers of local businesses and training concerns of individuals living in the area. |
| • Common needs for local businesses or general population of an area. |
| • Target groups for promotion purposes -- who might be interested and how to get information to them. |
| • Turnover rate in each industry for each occupation. |
| • Portion of working population served in various geographic areas -- and what is adequate "saturation" level. |

Table 23 (Continued)

| Information Needs |
| --- |
| • Access to information about total budget of AVTI as well as about all adult education in the local schools in the service area in order to determine the cost of adult services. |
| • What does program <u>really cost</u> including support services, supplies, equipment, phone, janitor, etc. -- there is a need for a uniform formula for allocation of cost and budget preparation -- what percent of cost is vocational reimbursement covering (e.g., salary, production, promotion, income tax paid). |
| • Impact of adult program on individual community, employer, and society -- cost/benefit of program. |
| • Follow-up information on former students of adult programs. |
| • Why should the public pay for adult vocational education -- why doesn't industry do it themselves. |
| • How effective are competitors in doing the job of adult vocational education -- what is the cost of these programs. |
| • Which industries are too small to do training by themselves. |
| • Support of advisory committee. |
| • How adult vocational education is done in other states. |
| • How important is it to industry to offer programs with minimum lapse of time between request and response. |
| • Proportion of courses which are offered on request basis from industry. |
| • Income level of program participants before and after program. |